UNIVERSITÉ DU QUÉBEC À MONTRÉAL

MÉCANISMES DE DÉVELOPPEMENT PROPRE DE REBOISEMENT: DÉVELOPPEMENT DURABLE OU ÉCO-COLONIALISME POUR LES COMMUNAUTÉS AUTOCHTONES ? ÉTUDE DE CAS D'IPETI-EMBERÁ

MÉMOIRE
PRÉSENTÉ
COMME EXIGENCE PARTIELLE
DE LA MAÎTRISE EN SCIENCES DE L'ENVIRONNEMENT

PAR
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JUIN 2008

UNIVERSITÉ DU QUÉBEC À MONTRÉAL

REFORESTATION CLEAN DEVELOPMENT MECHANISM PROJECTS : SUSTAINABLE DEVELOPMENT OR ECO-COLONIALISM FOR INDIGENOUS COMMUNITIES ? THE CASE STUDY OF THE IPETI-EMBERÁ

MASTERS THESIS
PRESENTED
AS PART OF THE REQUIREMENTS
FOR THE MASTERS PROGRAM IN ENVIRONMENTAL SCIENCES

BY
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JUNE 2008

UNIVERSITÉ DU QUÉBEC À MONTRÉAL
Service des bibliothèques

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In culture, as well as in nature,
diversity holds the potential for innovation
and opens the way for creative, non-linear solutions.

Wolfgang Sachs, 1999

REMERCIEMENTS

There are many people who I would like to thank for accompanying me on this academic and philosophical journey. Firstly, thank-you to my director, Professor Lucie Sauvé, not only for her professional assistance but also for providing me with a milieu in which to express myself and that allowed me to share the warmth of those at the Chaire de recherche du Canada en éducation relative à l'environnement. I would also like to highlight my infinite gratitude to Dr. Catherine Potvin at the University of McGill, for making it possible for me to accomplish my dream of conducting research in the tropical forest. Many thanks to those in Ipeti: Omaira, Areseli, Laura, Olga, those who accepted to be interviewed and especially to Gloria and Lana Caisama, the couple who took me into their home and showed me such care and generosity. For her spirit, I would also like to express my gratitude to Nilka Teijeria.

For having encouraged me to discover this path and for always believing in me, thank-you to my favourite co-searcher, Karine Filiatrault. Pr. Hattenschwiler and Marie Saint-Arnaud, you have both been great sources of inspiration. Thank-you to Renée Ouimet for lending me her 'wise-vision spectacles'. Shukaria to my parents, Shehnaz and Tom Hutchinson, for providing me with the solid foundations upon which I have been able to create. And last but not least, I would like to thank Stéphane Daniau for nourishing me with his joie de vivre, food, affection and constant support.

My graduate studies were made possible by the Fonds de recherche sur la société et la culture and fieldwork for this research was supported by Dr. Catherine Potvin and the Quebec Ministry of Education.

I dedicate this thesis to my radiant sister, my brilliant brother and the shinning stars that have filled our family's sky with joy: Shakib Bheriani and Karim Thomas Hutchinson: *the world is full of possibilities waiting only to be cultivated with Belief.*

AVANT-PROPOS

When I was a teenager, I had the opportunity to spend three summers working in an Aboriginal Cultural Camp in the middle of the Central Eastern Alberta. Aboriginal children, adopted by non-aboriginal families, would come to frolic amongst the trees while learning about their traditions: songs, handicrafts, stories, dances and spirituality. These children (and some times other adults) came to this place, where healing was synonymous with Culture and Nature. Often, when we counsellors didn't want to 'work too hard', we would take the children into the woods and let them run free, looking for deer tracks, collecting Saskatoon berries and playing hide-and-go-seek amongst the bushes; whilst we would lazily lay against a tree, gazing up at the branches with one eye and at the children with the other. I believe that was at this moment I fell in love with the forest, yet at the time I didn't know it.

In fact, at that time, what seemed to mark me the most was my feelings of anger. I was angry at the number of foetal alcohol syndrome children, the poverty of the neighbouring indigenous communities, the sexual abuse that many of their people had suffered and the racism the 'Colonizers' expressed towards the 'Natives'. Although it was an adolescent's rage, it was generated by the injustice of a 'System' that favoured some whilst leaving others behind. I kept repeating to my friends and family in the city that, had I grown up in the challenging conditions of life on the reserve (often no running water, little social infrastructure, prevalent drug and alcohol abuse, parents who had been sexually abused as well as culturally and socially alienated in the 60's during their 'internment' in residential schools), I too would have developed a few *'social problems'* of my own!

Motivated by the desire to help and support others, I soon left for University to complete a Bachelor's in Social Work. Believing in the empowerment of the marginalized, I chose to specialize in community organization and popular education. Working with community groups eventually brought me in contact with environmental groups who were working for justice for both people and for Nature. This approach appealed to me, felt more complete and gave greater meaning to my, at times, discouraging work. I decided to enter this Masters

programme because the students' angle of environmental study was based on their previous profession. When I began the programme, I was uncertain of what exactly to 'research', however, I was certain that it would be the exploration of issues related to indigenous communities and trees. It has been a challenging and confronting process for which I feel extremely fortunate to have had experienced.When I began the programme, I was uncertain of what exactly to 'research', yet I was certain that it would be the exploration of issues related to indigenous communities and trees. It has been a challenging and confronting process and I feel extremely fortunate to have had experienced. I must, however, admit that it is strange to be writing the final pages of this scientific report almost 15 years later and to find myself once again being inhabited by an anger similar to that which I experienced in my youth: anger against a system which creates wealth on the backs of others, which favours some, whilst leaving others behind. Thankfully, today this frustration is balanced by the passion I feel when I am in the Nature and the comfort of the solidarity of others who believe in justice, in critical thinking-acting, in ethical lifestyles and in the splendour and generosity of this Earth.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANAM	Authoridad National Ambiental
CDM	Clean Development Mechanism
DNA	Designated National Authority
CER	Certified Emissions Reduction Unit
COP	Conference of the Parties
DNA	Designated National Authority
DOE	Designated Operational Authority
EB	Executive Board
GHG	Green House Gases
IIFCC	International Indigenous Forum on Climate Change
IIPFCC	International Indigenous People's Forum on Climate Change
IFIPCC	International Forum of Indigenous Peoples on Climate Change
IFIPLCCC	International Forum of Indigenous Peoples and Local Communities on Climate Change
IP	Indigenous People
IPC	Indigenous People's Caucus
IPCC	Intergovernmental Panel on Climate Change
IPLCC	Indigenous Peoples and Local Communities Caucus
KP	Kyoto Protocol
MOP	Meeting of the Parties of the Kyoto Protocol
ODA	Official Development Assistance
SD	Sustainable Development
UNFCCC	United Nations Framework Convention on Climate Change

RÉSUMÉ

Les MDP: stratégies de développement « durable » ou éco-colonialisme?

Afin d'aider les pays industrialisés à atteindre leurs objectifs de réduction de gaz à effet de serre, le protocole de Kyoto inclut trois mécanismes de flexibilité, dont le Mécanisme pour un Développement Propre (MDP). L'article 12.2 du protocole stipule que l'objet du MDP est également d'aider les « pays en développement » à parvenir à un « développement durable ». Cette recherche se penche sur la pertinence d'un mécanisme de marché, conçu par des instances internationales, mais appliqué dans des communautés locales.

À l'aide d'une étude de cas, employant des stratégies de collecte de données qualitatives, la recherche explore le rapport que la communauté autochtone d'Emberá à Ipetí au Panama entretient envers le projet de séquestration de carbone de reboisement qui s'élabore sur leur territoire. L'étude s'inspire du champ théorique des représentations sociales et tente d'exposer les différentes visions du monde impliquées dans l'établissement d'un projet de MDP. En identifiant les éléments de représentations sociales qu'ont les Emberá de la forêt, du développement et du projet de MDP, la recherche met de l'avant les besoins concrets d'une communauté dépendant de la nature pour leur survie et ainsi, offre une analyse critique du développement durable et de l'approche technoscientifique des stratégies employées pour répondre aux problèmes liés aux changements climatiques.

À la lumière des changements que le développement de la région implique dans les sphères tant individuelle que collective et environnementale de la réalité des Emberá, plusieurs questions sont soulevées quant à la capacité d'un projet MDP de reboisement de participer à l'amélioration de la qualité de vie d'une communauté autochtone, pauvre et marginalisée. De plus, les objectifs du marché d'échange de « crédits de carbone » sont remisent en question. Le fait de planter des arbres dans les pays du Sud pour compenser les émissions excessives de gaz à effet de serre dans les pays du Nord apparaît comme une forme de colonialisme écologique.

Mots clés : Mécanisme de développement propre (MDP), communauté autochtone, Emberá, forêt, reboisement, développement durable, qualité de vie, représentations sociales, éco-colonialism.

SUMMARY

CDM's: Sustainable 'Development' Strategy or Eco-Colonialism?

In order to help industrialized nations achieve their greenhouse gas emissions reductions, the Kyoto protocol encourages the use of three flexibility mechanisms, one of which is the Clean Development Mechanism (CDM). Article 12.2. of the protocol stipulates that the objective of the CDM is also to help 'developing countries' achieve 'sustainable development'. This research addresses the relevance of a market mechanism conceived by international instances yet indented for application in local communities.

This case study employed a qualitative data collection strategy as a means of exploring the rapport the indigenous community of the Ipeti-Emberá in Panama have with the reforestation carbon sequestration project being elaborated on their territory. Inspired by social representation theory, this research exposes the different world visions involved in the application of a CDM project. By identifying elements of the Emberá's social representations of the forest, development and of the carbon project, the research highlights the concrete needs of a community depending on nature for its survival and offers a critical analyse of sustainable development and the techno-scientific strategies used to respond to climate change.

In light of the changes in the individual, social and nature spheres of the Emberá's reality, brought on by development in the region, several questions are raised regarding the capacity of a reforestation CDM project to improve the quality of life for an indigenous, poor, and marginalised community as well as regarding the legitimacy of a market designed for trading carbon credits. The concept of planting trees in the South to compensate for the excessive emissions of green house gases in the North is associated with a form of ecological colonialism.

Keywords: Clean Development Mechanism (CDM), indigenous community, Emberá, forest, reforestation, sustainable development, quality of life, social representation, ecological colonialism.

INTRODUCTION

The rising of the earth's temperatures since the mid 20th century has been attributed to increasingly green house gas (GHG) intensive lifestyles and is causing, amongst other things, sea levels to grow and glaciers to melt, thus resulting in disturbing weather alterations. In light of these issues, developing policy to deal with these climatic changes has been a dominant theme which has mobilized global wide intergovernmental negotiations. The resulting United Nations Framework Convention on Climate Change gave way to the legally binding Kyoto Protocol, requiring the signatory industrialized countries to reduce their GHG (particularly carbon dioxide) emissions to below their 1990 emissions levels. One of the mechanisms created to meet theses emission reduction targets, in a cost effective manner, is the Clean Development Mechanism (CDM). This market mechanism, (which requires the creation of a global wide carbon market), allows industrialized countries to buy 'carbon credits' from projects implemented in 'developing countries' which , for example, plant trees on deforested land. Since trees store carbon in their roots and the soil (carbon stocks), the CDM is thought to mathematically reduce the amount of carbon dioxide in the atmosphere. The benefits for the host 'developing countries' is not only more trees but also foreign investments which aspire to encourage sustainable development.

The CDM is subject to controversy for several technical reasons, however this research focuses on the dissonance between the creation (and regulation) of a mechanism based on global level interests and the implications of its application at local community level. The following qualitative case study is inspired by theoretical field of social representations and explores the realities of the indigenous community of Ipeti-Emberá in Panama (pop. 550), who is involved in the elaboration of a reforestation CDM project on their territory.

Chapter I presents the technical aspects of CDM projects as well as the different world views concerned by their application. A literature review of the various theoretical and empirical studies of CDM projects precedes the clarification of the principal research questions. Since this investigation focuses on the sustainable development objective of the CDM, which claims to be able to deliver livelihood improvements to local communities, the central

research objective of characterizing elements of the Emberá's representations of the forest, development and the carbon project is also explained. The following Chapter II, provides information which helps contextualize the Emberá's reality and experience of the world. Themes include the indigenous community's migratory history, way of life and political structure. The respondents encountered during the individual interview data collection strategy are also presented in addition to a few aspects of their individual reality. Chapter III illustrates the theoretical framework which guided the elaboration of the research process. Elements of critical theory, development and post-development theory and social representation theory are presented in relation to their application in this study. The *a posteriori* emerging analytical framework, identified as the *Livelihood Regeneration Paradigm* is also contextualized based on the Emberá's intimate relationship with Nature.

These theoretical aspects are then followed by Chapter IV, which exposes the methodological approach and concerns which were involved in the preparation, implementation and analysis fieldwork. Qualitative strategies such as participant observation, focus group and individual interviews are discussed as well as practical considerations for carrying out field work in a foreign country. The results of the data analysis are then presented in Chapter V according to the categories of analysis associated with the three spheres of the aforementioned *Livelihood Regeneration Paradigm*: Nature, Society, the Self (individual). Respondents' citations are woven together, depicting the significant change experienced by the community since the onset of development in their region. Although the Carbon project is not yet in application, elements of their perception of the project, as it is being elaborated in their community, are equally put into the foreground. The final chapter of this work characterizes elements of the respondents' social representations of the CDM components (the forest, development and the project) and introduces the discussion of the relevance of this type of market mechanism for indigenous and other local communities. The advantages and benefits associated to CDM projects, as identified in the literature review and in the case study, are presented as are the identified disadvantages and risks. Solutions to the various CDM projects risks are equally addressed before exposing the research's final prognosis regarding the capacity of a market based mechanism to deliver local livelihood benefits.

CHAPTER I

THE PROBLEMATIC: CLIMATE CHANGE NEGOTIATIONS, CLEAN DEVELOPMENT MECHANISM SINK PROJECTS AND INDIGENOUS COMMUNITIES

This introductory chapter is a reflection of the literature review which was conducted through out the entire research process. The objectives of the Clean Develop Mechanism as well as the negotiation process which determined its associated regulations are identified as to provide an understanding of the dominant views which influenced the current structure of the mechanism. A review of theoretical reflections as well as practical considerations based on examples of forestry sink projects are also included to favour a preliminary understanding of this relatively new and controversial means of responding to climate change.

1.1. The United Nations Framework Convention on Climate Change and the Kyoto Protocol

Over the past century, technological and modern life style "improvements" have lead to exponential increases in the combustion of non-renewable and polluting fossil fuels, extreme land cover change and intensive deforestation. In the 1950's, the scientific community began observing global warming trends that accompanied the process of industrialization and warned that these changes would cause the extinction of numerous plant and animal species as well as dangerous climate alterations (UNFCCC, 2007). In 1992, this apprehension brought 189 countries to begin policy negotiations aimed reducing global warming and to ratifying the United Nations Framework Convention on Climate Change in 1992. The ultimate objective of the Convention is the:

> "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a

> level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and *to enable economic development to proceed in a sustainable manner*" (UNCCS, 2005a: Article 2, p.6) (emphasis added).

In order to achieve this objective, the majority of the Conference of the Parties (COP) to the Convention members at the 3rd session of UNFCCC in 1997 (COP 3), signed the Kyoto Protocol. The protocol came into effect in February 2005 and legally binds industrialized signatory countries known as Annex I Parties (which does not include the United States and Australia), to reduce their greenhouse gas emissions on average by 5.2% below 1990 emission rates by an initial commitment period (2008-2012) (UNCCS, 2005b). In order to reduce the costs of achieving these emissions targets rates, Parties may utilize various "flexibility mechanisms". The most controversial of these is the clean development mechanisms (CDM), an instrument which permits Annex 1 countries to purchase certified emissions reduction credits (CERs) from projects implemented in developing countries[1] that theoretically reduce greenhouse gases levels in atmosphere. The logic behind this type of exchange is one that considers that no matter where an emission reduction takes place, the long-term impact is the same (Draper and Reed, 2005). The protocol states that:

> The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments. (UNCCS b. 2005: Article 12.2, p.19)

Explicitly, this signifies that instead of reducing GHG emissions at the source, private sector or government institutions from 'developed countries' can mathematically credit their

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[1] This research is uncomfortable with the term developing countries, and has searched for a better terminology. Since not all of these countries are situated in the South, this term does not seem appropriate either. We have decided to employ the term Majority World, indicating that the majortity of the world's population inhabit these countries or the term 'developing countries', in quotation marks indicating a certain skeptism towards type of categorization.

emissions reductions for up to a maximum of 1% via the use of a flexible, cost efficient, market mechanism (Draper and Reed, 2005). Considered by many as a win-win situation, this emissions reduction and sustainable development opportunity is described in the *CDM User Guide* prepared by the Bureau for Development Policy of the United Nations Development Program (UNPD), as follows:

> "Ideally, it will encourage the additional flow of capital into developing countries, accelerate technology transfer, and enable developing countries to leapfrog to cleaner technologies. At the same time, it is intended to help developed countries achieve their emission reduction commitments at a *lower cost* than would otherwise be possible". (UNDP, 2004:11) (emphasis added)

Carbon dioxide (CO_2) is one of the green house gases most prominently targeted by CDM activities (UNFCCC, 2007). This is because since industrialization, the dramatic increase in the combustion of CO_2 emitting fossil fuels has caused this gas to build up in the atmosphere and contributes towards generating the green house effect. The accumulated CO_2 prohibits excess heat from leaving the earth's atmosphere which then leads to increased global temperatures (Draper and Reed, 2005). CDM projects include a variety of project activities which aim to reduce CO_2 in the atmosphere through different sectors such as: energy efficiency, transport improvement and forestry land use change (Watson et al, 2000). Forestry land use change activities are based on the ecosystems regulatory functioning and the capacity of trees to absorb certain amounts of CO_2. Trees have the ability to recycle certain amounts of CO_2 back into oxygen (O_2), which is then partly released into the atmosphere and partly transform it into nutrient compounds such as glucose ($C_6H_{12}0_6$). A portion of these compounds are used as fuel for the vegetations respiration and the rest is converted back to CO_2, which is stored in the biomass and soils of forests (Draper and Reed, 2005).

1.2. Land Use, Land-Use Change and Forestry projects

The UNFCCC refers to the sequestration or storing of carbon as being a "carbon sink" and considers the process to be an important tool for the mitigation of global climate change. The

inclusion of forestry carbon sink projects implemented in developing countries as valid CDM activities has been subject to great controversy amongst Country Parties because of the scientific complexity of calculating carbon sequestration and other conflicting knowledge claims (Bäckstrand and Eva Lövbrand, 2006) (see table 1.1). Some argued forestry sinks were 'technical loopholes' that would reduce the environmental integrity of the Protocol (Fogel, 2004). The ambiguity involved in accurately measuring stored carbon amongst other technical issues even caused negotiations of the sixth session of the Conference of the Parties (COP 6a) at the Hague in November 2000 to fail. It was only at a second session of the Sixth Conference of the Parties (COP 6b), eight months later in Bonn, Germany, that the countries were able to agree upon and adopt the main concepts of the flexible mechanism and the inclusion of forestry sink projects (IHQEDS, 2005).

During the COP 7 in 2001, the principals of the Convention were translated into the legal texts known as the Marrakech Accords. These accords stipulate the general rules, procedures and modalities of the CDM, including Land Use Change and Forestry (LUCF) projects which act as 'carbon offsets' that facilitate the emission reduction commitments made under the Kyoto Protocol (Trexler, 2003). During COP 8 in New Delhi, CDM definitions were adopted for the first Kyoto commitment period (2008-2012) and limited LUCF carbon projects to afforestation and reforestation (UNCCS, 2005b). The Marrakech Accords definitions and modalities for afforestation and reforestation were adopted at COP 9 in Milan. Afforestation is defined as the process of establishing and growing forests on agricultural or bare land which have not contain forests for a period of fifty years. Reforestation is the replanting of forest biomass in areas where forests existed before December 1989 but where the land has since been converted into another non forested land use. The Accords even take care to define as forest as:

> a minimum area of land of 0.05-1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10-30 per cent with trees with the potential to reach a minimum height of 2-5 metres at maturity *in situ*. A forest may consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground or open forest. Young natural stands and all plantations which have yet to reach a crown density of 10-30 per cent or tree height of 2-5 metres

> are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest. (UNFCCCC, 2002: FCCC/CP/2001/13 /Add.1:58)

At COP 10 in Buenos Aires, modalities for small scale afforestation and reforestation projects were adopted. However, as of COP 11 in Montreal, problems around the quality of CDM projects emerged and continue to persist even in the last round of meetings at COP 13 in Bali. Regardless of the uncertainty of carbon markets after the first commitment period (post 2012), country parties have not abandoned the idea of a carbon trading.

Thus, in the perspective of an emerging Carbon Credit Market, the installation of a large scale mono-culture plantation on degraded tropical land can be considerer as an eligible CDM activity, but the conservation of an endangered primary or secondary forest, however, is not eligible (UNDP, 2004). This excludes forest communities in search of investments to protect their land from deforestation from benefiting from the protocols' flexible mechanisms.

In order to prepare a CDM project, developers must begin by calculating a 'baseline scenario' of the project area over a specific time frame. This time span is referred to as crediting period, which is either for seven years and which is renewable twice (total of 21 years) or for a one time ten years period (CDM Watch, 2003). Establishing this scenario consists of calculating a 'business as usual' trajectory, which is the estimation of the number of GHG emissions which would be released in a project boundary without the presence of a CDM activity. This information is then used to demonstrate the projects 'additionality', that is the difference between baseline emission levels and the estimated reduced levels of GHG released because of project activities within the scope of a credit trading scheme (CDM Watch, 2003).

Once a stakeholder elaborates a project with sufficient sequestering capacity, it must assure that it meets a series of validation requirements elaborated in the 2001 Marrakech Accords (CDM Watch, 2003). Projects must receive approval for the host country's Designated

National Authority (DNA) approval. Once the projects methodology is approved by CDM Executive Board (EB) the host community and the investor may begin trading CER's (UNCCS, 2005b). Each CER unit is established on a per ton of carbon sequestered and represents a market value varying between 5-22$ per ton (Tschakert et al., 2007).

1.2.1. The Sustainable Development Objective

The GHG emissions reduction objective of the CDM requires quantities of carbon to be calculated, methodologies to be validated by experts and credits to be certified by brokers. However, the evaluation of sustainable development objective is not required, has not been assigned any criteria nor been legislated in anyway (Lohmann, 2005). Neither the Convention nor the Protocol provide a guideline definition for the concept. The only references to sustainable development in the UNFCCC text, is its' description as part of each countries right and that the international economic system should contribute towards sustainable economic growth:

> "climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty (UNCCS, 2005a:4)"

As for the Kyoto Protocol, the word sustainable development only appears in the text three times. In summary, the sustainable development can be promoted if Parties limit their GHG emissions to their reduction limits and their governments elaborate and implement policies in accordance with their national circumstances (UNCCS, 2005b.).

These references appear to be incomplete if the theoretical conception of sustainable development as advocated by the United Nations World Commission for Environment and Development report Our Common Future are to be applied (WCED, 1987). According to this report, known as the Brundtland report, sustainable development is based on a mutually reinforcing tri-pillar development that should equally integrate environmental, social and economic considerations (WCED, 1987). Although this concept has received outstanding

approbation in international policy, as well as on national and regional levels, some argue that it owes its success to its' ambiguous definition and lack of substance (Smouths, 2005). It is often critiqued for its malleable characterization that gives way to a multitude of interpretations, each dependent on its promoters' interests (Smouths, 2005). This assessment is accurate in the case of CDM's since the evaluation of whether of not a project meets national 'sustainable development' criteria has been left up to the discretion of each host country's Designated National Authority (DNA) (UNCCS, 2005b).

The United Nations Bureau for Policy Development foresees sustainable development as being a 'primary product' of CDM activities and that results should be evaluated in a long term equity perspective defined as a "high-growth, low-carbon trajectory within the financial, institutional and technological reach of host countries" (UNDP, 2004:13). However, by insisting that "policies and measures to deal with climate change be cost-effective so as to ensure global benefits at the lowest possible cost" (UNCCS, 2005a: Article 3.3, p.7) and by constantly placing an emphasis on sustained economic growth, the climate change texts suggest that financial expansion and environmental protection are not exclusive and can be mutually achieved though a liberal market (Bäckstrand and Eva Lovbrand, 2006). This world vision not only fails to make a connection between the aspirations for constant economic growth and environmental degradation (Bäckstrand and Eva Lövbrand, 2006) but it externalizes the environmental cost of economic efficiency and as a result, neglects the environmental sphere of sustainable development.

Money invested in 'green' projects implemented in 'developing countries' distracts industrialized nations from adopting less fossil fuel intensive behaviours at the source and financing is diverted from the development of renewable energies (Carbon Trade Watch, 2005). The irony of the sustainable development objective of CDM modalities is that instead of encouraging investment in energy efficiently and alternatives, money is spent to buy permission to continue emitting polluting carbon into the atmosphere. Additionally, important investments are made in generating employment for government ministries, trading

firms, environmental consultants, law firms, industrial standard setting bodies and North American or European NGO's (Lohmann, 2005).

International Indigenous People leaders have constantly criticize CDM modalities for their incapacity to assure the equal sharing of project benefit, authentic community participation or consideration of locally perceived needs (Fogel, 2004). These deficiencies represent yet a failure to incorporate the social dimension of a theoretical, tri-dimensional sustainable development model. Granted, the EB strongly encourages investors to elaborate projects with high social returns to local communities, but CDM's remain a market driven mechanism (UNDP, 2004). Policy does not include formal guidelines or explicit evaluation systems to measure the social impacts and/or benefits of projects (Kolshus et al., 2001).

Keeping in mind that in developing countries' DNA is responsible for only approving projects that meet national sustainable objectives, critical reflection conjures the following blatant question: Would a country in need of financial capital seriously adopt stringent environmental and social legislation that would render their territory less competitive and create obstacles for foreign investment? Countless examples of lax of environmental, labour or tax regulations can be found in many poor Majority World countries and in free trade zones that have reduced trade barriers such as tariffs, quotas and bureaucratic requirements in order to create optimal foreign investment conditions. The economic efficiency required by the market seems to be, more often than not, in competition with activities that foster sustainable and entrenched livelihood improvement for local communities (Brown and Corbera, 2003) Because emissions trading is portrayed as technical operation rather than political decision, it disregards the social consequences of a community involved on carbon sequestration (Fogel, 2004).

1.2.2. The Global vs. the Local

The powers of global governance have used the concepts of carbon mitigation not only to develop a climate mitigation mechanism but also to establish a global-wide carbon market. However, this entirely internationally conceived mechanism depends on the efficient and

successful application of concepts, regulations and methodologies at a local community level. CDM regulations on carbon mitigation requires project activities be standardized in the application of effective inventory methods, precise measurements and above all error minimization and site control strategies (Bäckstrand and Eva Lovbrand, 2006). This standardization assumes that all contexts are homogenous and that regularity is attainable (Backstrand and Eva Lovbrand, 2006), thus local communities are transformed into homogenous project participants (Fogel, 2004). Internationally recognized ways of knowing, interpreting and doing, influenced by Western Scientific Knowledge, are superimposed on local, place based systems of functioning (Fogel, 2004). This juxtaposition merits further investigation especially considering the negative impacts other international environmental agreements have had on local communities in the past. International treaties on national park systems or wildlife conservation for example, have received great critique because of their failure to take into account unequal South-North power structures and multiple world views (Jeanrenaud, 2002).

1.2.3. The Role of Local Participation

The Brundtland Report explains that the sustainable development concept includes notions of improved equity that is, assuring that the essential needs of the worlds poor are met and that they too are extended the opportunity to a better life (WCED, 1987).

In addition, the Report recognizes that "perceived needs are socially and culturally determined" (WCED, 1987:55) and thus affirms that it is fundamental to assure the effective participation of local communities in the decision making process in order for them to promote their interests (WCED, 1987:58). In the case of CDM, international powers have conceived a locally applicable mechanism to meet their carbon needs. However, they have done so neither with an awareness of locally perceived needs nor with the participation of local communities (Fogel, 2004), thus making it difficult to consider their wellbeing in the elaboration of CDM modalities.

Table 1.1: Summary of UNFCCC negotiations regarding the CDM*

UNFCCC event and Date	**Location**	**Chronology of activities related to CDM**
COP 6 a 2000, November	*La Hague, Netherlands*	Conference negotiations fail due to technical issues regarding the inclusion of forest sink projects.
COP 6 b 2001, July	*Bonn, Germany*	Bonn accords adopted: the main lines on flexible mechanisms, modalities for the management of forests and afforestation et forestation sink projects.
COP 7 2001, November	*Marrakech, Morocco*	Translation of principals adopted at Bonn into legal texts; Adoption of general rules, procedures and modalities regarding CDM's; Forestry Carbon sinks accepted.
COP 8 2002, October	*New Delhi, India*	Adoption of rules for the CDM Executive Board (EB); Elaboration of CDM's definitions.
COP 9 2003, December	*Milan, Italy*	Adoption of definition of forest, afforestation, reforestation; Adoption of modalities relative to afforestation and reforestation CDM's
COP 10 2004, November	*Buenos Aires, Argentina*	First report of the EB accepted; Adoption of modalities and procedures for A/F small scale projects
COP 11 2005, December	*Montreal, Canada*	Need to improve CDM's becomes urgent; Proposition to include avoided deforestation in CDM activities; Discussion on CDM activities post 2012 and the inclusion of avoided deforestation
COP 12 2006, November	*Nairobi, Kenya*	Uncertainty of the Carbon Market post 2012 Inequitable distribution of the CDM projects and overcrowding of low cost projects; Stakeholders points of view often neglected and present needs for upfront payments; DNA's often do not defend the sustainable development criteria.
COP 13 2007, December	*Bali, Indonesia*	CDM of central discussion because of concerns with structure/ functioning of existing CDM projects: lack of additionality, unreliable baseline, little SD results; Switzerland proposes to review CDM's environmental integrity and capacity to contribute towards SD.

*This summary was produced by the author by consulting the Daily NGO newsletters published by the Climate Action Network International at each of the COP events (www.climatenetwork.org-eco).

Right at the outset, this disregard creates obstacles to achieving mutually beneficial partnerships between global and local stakeholders. The impact of this type of imbalanced relationship can be seen in years of centralized forest management projects such as in forest protection and large scale plantations in rural areas. More often than not, these forestry projects fail due to limited local participation and unequal distribution of benefits (Smith and Scherr, 2002).

Even the United Nations Bureau for Development Policy evokes several issues regarding local communities' equal participation in projects in their *CDM User Guide*. An example of participation inconsistencies is that regulations insist that project designs be available for stakeholder consultation and be posted on the Internet. However, there is no requirement to assure that documents are available in a language familiar to stakeholders or even that stakeholders be literate or that they even have access to the Internet.

Many authors argue that it is precisely because the CDM is conceived with a global and managerial world view of development, which relies on the accumulation of capital, the minimization of production costs and the domination of natural resources, that it is difficult to integrate local ecological and social realities into such a mechanism (Backstrand and Lovbrand, 2006, Lohman, 2005, Fogel, 2004, Brown and Corbera, 2003).

1.3. International Indigenous Peoples view on Kyoto and CDM's

Provoked by past experiences of exploitation at the hands of "global" development projects, International Indigenous People's organizations have expressed their concern over these sustainable development issues throughout the Convention and Protocol negotiation process. Their communities are especially vulnerable to climate change issues because of their intimate relationship with Nature and because many live in fragile and vulnerable ecosystems (IPC, 2002). Many directly depend on forests for their survival and are thus particularly concerned by forestry carbon sink activities. Since the First International Forum of Indigenous Peoples on Climate Change in 2000, representatives have constantly insisted that they be given the right to officially participate in the UNFCCC meetings. Although their

requests have been not been granted, they continue to hold caucuses, emit declarations and draft statements defending an international indigenous perspective on climate change negotiations and CDM regulations. While not every local indigenous community would be in full accordance with all the aspects of these international level statements, they remain an indication of the different impacts CDM projects could have on marginalized communities.

Indigenous declarations have systematically made it clear that their "cosmovision strongly binds biological diversity, cultural and spiritual identity and unites [their] people with [their] ancestral territories" (IIPFCC, 2005). As illustrated in table 1.2., they have regularly expressed concern over the fact that their cosmovision is in contradiction with the worldview used in climate change negotiations which reduces the value of land to its carbon absorption capacity (IIFCC, 2000).

Representatives from the First Indigenous Peoples Forum in 2000, which was held at the same time as the UNFCCC 13th Session of Subsidiary Bodies in Lyon, declared that the dominant development model endangered the Earth's integrity and categorically opposed to the inclusion of forestry sinks in CDM activities. They felt that the investment in carbon forestry projects would not result in reduced GHG emissions but only contribute towards a new form of colonialism by expropriating and violating their lands rights (IFIPCC, 2000). Indigenous groups also clearly opposed the development of a carbon market. Once again, at the COP 6a held at the Hague in November 2000, the Second International Indigenous Forum on Climate Change rejected the inclusion of carbon sinks in CDM because of the carbon sequestration value attributed to forests. The rejection was founded on a concern that plantations, carbon sinks and tradable emissions would have adverse impacts their fragile ecosystems (IIFCC, 2000). During COP 6b in Bonn (the prior COP 6 meeting having failed because of the controversies around sink CDM projects), the Third International Forum of Indigenous Peoples and Local Communities made one last attempt to encourage decision makers to reject carbon sink projects. Indigenous representatives declared that they rejected the definition of carbon sinks as contemplated under the Kyoto Protocol and opposed the

mercantilist and utilitarian vision of forests which they felt negate their traditional spiritual values and cultural practices (IFIPLCCC, 2001).

During the Marrakech meetings of COP 7, the Indigenous Peoples Caucus seized the opportunity to reminded the international community that their "territories and natural and spiritual resources [were] the fundamental basis for [their] physical and cultural existence". Their statement to the Parties once again referred to the colonialist nature of CDM's because of the regulations inability to guarantee the respect of their Peoples cultures, practices, science and knowledge as well as their rights to free, prior informed consent (IPLCC, 2001). Having lost the battle against the CDM modality inclusion of forestry sinks, the Indigenous Peoples Statement at the New Delhi COP 8 in 2002 chose to employ a damage control strategy. They once again chose to highlight the need for carbon off-set projects to respect prior informed consent and to assure the equal sharing of benefits. The 6th International Indigenous People's Forum on Climate Change, which met during the 2003 COP 9 meetings in Milan spoke out about the social objectives of the CDM and claimed that "sink projects do not contribute to climate change mitigation and sustainable development" (6th IIPFCC, 2003:6f). In order for projects to achieve these objectives, Indigenous representatives stressed that flexible mechanisms must address transparency issues and once again, assure the equitable sharing of benefits.

For the first time, at the COP 10 in Buenos Aires, the Indigenous Peoples Declaration did not specifically address CDM issues and only acknowledged previous Indigenous Peoples declarations related to COP meetings. They did however demand an explanation as to why their multiple requests to for an official mechanism allowing their active participation in UNFCCC had not been granted (IPA, 2004). In 2005, Indigenous leaders at the first Meeting of the Parties to the Kyoto Protocol (MOP 1) and at the COP 11 held in Montreal again repeated this same request. Once again, in hopes of having their voice heard, leaders reminded the world that "the vital role of Indigenous Peoples in sustainable development" had already been officially recognized in many other international conventions and particularly in paragraph 25 of the 2002 Johannesburg Declaration that emerged from the

Table 1.2: Summary of Indigenous Peoples Statements on the CDM*

UNFCCC event and Date	Indigenous Peoples Event and Location	IP's Main Statements Regarding CDM's
COP 6 a 2000, November	2nd IFIPLCCC Declaration *Hague, Netherlands*	CDM world view of territory reduces forests to their carbon absorption capacity; Reject the inclusion of carbon sinks and Kyoto definitions related to forestry projects (IFIPLCCC, 2000).
COP 6 b 2001, July	3rd IIPFCC Declaration *Bonn, Germany*	Oppose the mercantilist and utilitarian vision of forests; Reject inclusion of carbon sink and Kyoto definitions related to forestry projects (IFIPLCCC, 2001).
COP 7 2001, November	IPLCC Statement *Marrakech, Morocco*	Inclusion of CDM's are a tool for the expropriation of lands and lead to neo-colonialism; Must guarantee the right to free, prior and informed consent of IP and local communities (IPLCC, 2001).
COP 8 2002, October	IPC Statement *New Delhi, India*	CDM's must incorporate principals which address transparency, free, prior and informed consent and benefit sharing with IP in order to achieve its sustainable development objective (IPC, 2002).
COP 9 2003, December	6th IIPFCC Declaration *Milan, Italy*	Afforestation and reforestation modalities of CDM do not respect IP rights; CDM's and sinks to not contribute to sustainable development and climate change mitigation; Must guarantee the right to free, prior and informed consent of IP and local communities (IPFCC, 2003).
COP 10 2004, November	Declaration of IP *Buenos Aires, Argentina*	Acknowledged previous IP statements; Request response to previous requests for formal mechanism to include IP in negotiation process (IP, 2004).
COP 11 2005, December	IIPFCC Statement *Montreal, Canada*	CDM modalities do not respect and guarantee land rights and self determination; CDM's and sinks to not contribute to sustainable development and climate change mitigation; IP should be involved in agenda items evaluating CDM and their short/long term effects (IIPFCC, 2005).
COP 12 2006, November	IIFCCC Press Conference *Nairobi, Kenya*	CDM projects are negatively impaction indigenous communities, lands, and land rights; Violate the rights to free, prior and informed consent; CDM plantation projects often use invasive species or genetically modified trees are imposed on their territories (IIFCC, 2006).
COP 13 2007, December	IFIPCC Statement *Bali, Indonesia*	Demand the meaningful inclusion of IP in climate change negotiations; CDM's cause human rights violations thus IP demand the respect of free prior and informed consent of IP communities before the application of projects (IFIPCC, 2007).

*This summary was constructed by the author based on multiple documents consulted during the literature review.

World Summit on Sustainable Development. At COP 12 in Kenya, IP groups complained about large scale plantation projects and claimed that existing CDM projects were violating their traditional land rights, and during COP 13 in Bali, they gave examples of how CDM projects violated human rights and once again spoke out about the exclusion of their people from climate change negotiations. Time and time again, Indigenous People have requested that the powers of the UNFCCC hear their voice, consider their way of life and integrate their concerns the regulation of carbon sinks regulation, and to be included in the international negotiating tables. Their demands highlight important social justice issues and merit further investigation.

1.4. Literature Review of the Problematic

Since reforestation projects are still at a developmental and pilot project phase, most scientific literature found explored issues related to the technical aspects of elaborating CDM activities. Examples of CDM research include methodologies for calculating baseline scenarios (Potvin et al., 2007), for establishing the transaction cost of various sized projects (Michaelowa and Jotzo, 2005) or for estimating carbon sequestration quantities under different forestry options (Bhadwal and Sing, 2002). These types of calculations complement one of the most economically pressing and prevalent types of CDM research which is the cost benefit, supply and demand analysis (Coomes et al., 2007, Garcia-Quijano et al., 2005, Dagoumas et al., 2004). Finally, other authors explore strategies to unite carbon and timber market objectives and to utilize forest management as a CDM strategy (Smith and Applegate, 2004).

The literature review did however reveal a few important works on the socio-environmental aspects CDM's. Sterk and Wittneben (2006) summarize the essence of this literature when highlighting the increasing global concern regarding the complex and costly process of elaborating projects as well the marginalization of financially uncompetitive projects that are most likely to encourage 'sustainable development' for host countries and local communities. The authors highlight another transversally mentioned issue, that is, the considerable amounts of money spent on certifying emissions reductions while "the process does not support host

countries in the formulation, monitoring and enforcement of the sustainable development criteria" (Sterk and Wittneben, 2006:4). The referenced critical CDM literature can be divided into two basic categories. The first group of writings tends to focus on the critique of CDM policy, whilst the second communicate the results of empirical research on particular pilot projects. The policy orientated documents all recognized that addressing environmental and social issues in the elaboration and implementation CDM's represented a central challenge to the process. However, they represented varying degrees of confidence in the CDM's capacity to delivery local livelihood benefits and can be further classified into two philosophical fields of literature: reformism or radicalism.

1.4.1. Reformist Policy Literature

In the category of literature which proposes a reform of CDM policy are the works of authors who seem to accept the reality of global carbon market and who consider that participatory carbon sequestration designs have the potential to contribute towards host country development goals. Amongst the most optimistic is the report of the World Conservation Union who considers the carbon market as a new opportunity to generate value from ecosystem services. Although they recognize that "current patterns of foreign investment and transaction costs encourage a market emphasis on large scale monocultures" (IUCN, 2002:4), they affirm that if environmental and social issues are addressed during the project elaboration process, the market will be able to regulate itself and encourage best business practices (IUCN, 2002).

With a slightly more critical approach, the report prepared by the Center for International Forestry Research affirms that since forests "are an integral part of the habitat and socio-cultural framework of rural communities" (Smith and Scherr, 2002:2), CDM forest activities have the potential to greatly influence rural livelihood strategies. They argue that multi-specie community based reforestation and multi-use community forestry can improve chances for local benefits and ward off the livelihood risks of large monocultures or the community excluding projects that are typically encouraged by the market. Smith and Scherr (2002) conclude that important proactive measures are required in the short term.

Most critical of all is the report of the International Institute for Environment and Development (Bass et al., 2000). After the examining the research emanating from 150 bilateral carbon offset schemes (not necessarily within the scope of the CDM), the authors concluded that it was difficult for local peoples to benefit from CDM projects due to weak local organization, unclear land tenure, complex CDM modalities and surprisingly enough, because money was simply not a sufficiently motivating factor to change local land use practices. Taking care not to be categorical in their opinions, the authors did suggested amongst other things, that if resource dependant communities are to benefit from sink projects, flexibility must be given for local difference and community project management capabilities must be enhanced in order to assure that the local elite are not the only ones who profit (Bass et al., 2000).

Finally Klooster and Masera (2000) claim to embrace the CDM on the condition that modalities accept community forestry management projects to help avoid deforestation and restore degraded forests. Although avoided deforestation is not included in the first Kyoto Protocol commitment period, the authors argue that small-scale agroforestry projects which include a community participation component can realistically offer tangible results for carbon mitigation (Klooster and Massera, 2000).

1.4.2. Radical Policy Literature

Those with more radical points of view argue that critical debate is needed on "the merits, problems and complex value trade-offs associated with international sink projects" (Backstrand and Lovbrand, 2006:51). Radicalists see Kyoto as obstructing constructive approaches to climate change (Lohmann, 2005). It is perceived as an expert-driven governance where those in power interpret science by standardizing people and nature, by attributing values to the instrumental and utilitarian and by marginalizing all forms of diversity (Fogel, 2004).

Lohmann et al., (2005) claim that calculating emission reductions through carbon trading provides polluters, whose costs of reduction are higher than purchasing carbon credits, with

opportunities to avoid reducing emissions by simply purchasing polluting permits. The responsibility of the wealthiest is thus seen as being transferred to the poorest and the 'South' is portrayed as a carbon 'dumping zone' for industrialized countries (Bachram, 2006). Social and environmental injustices seen as being further exacerbated by the race for cost efficient carbon emission reductions that do not question the ethics of fossil fuels based consumption (Bachram, 2006). Authors also argue that trading schemes are not compatible with larger scale objectives such as saving money for society as a whole or with a long-term societal change or environmental protection (Lohmann et al., 2005).

1.4.3. Empirical Literature

Although the application of CDM reforestation projects remain at the developmental and pilot project stages, a diversity of project structures have been explored in relation to sustainable development objectives in Latin America and in India. Activities range from the expansion of National Parks through reforestation in the Noel Kempff Mercado Climate Action Project in Bolivia (Asquith et al., 2002), to large scale eucalyptus plantations in Brazil (May et al., 2004), to small scale *Social Carbon* Agroforestry methodologies in the Brazilian Bananal Island region (Rezende and Merlin, 2003), individual carbon contracts in Chiapas Mexico (Nelson and de Jong, 2003), and to common property lands in India (Gundimeda, 2004). Researchers unanimously conclude that CDM policy focuses on international and national levels rather than on the "interface between national actors, project developers and local communities (Brown and Corbera, 2003).

The researchers exploring the Noel Kempff project in Bolivia (Asquith et al., 2002) clearly demonstrated that sink projects had the potential to contribute towards sustainable development, biodiversity protection and carbon sequestering but found that developers often ignored local peoples perspectives, that the project tended to "create a climate of expectancy and dependency" (2002:33) and contributed towards creating unrealistic financial expectations (Asquith et al., 2002). Other social and environmental issues emerged due to the Plantar Project in the State of Minas Gerais, Brazil (May et al., 2004). The commercial project claims to reduce CO_2 emissions by using Eucalyptus trees from their 23 100 hectare

monoculture plantations by producing charcoal as a substitute for coal. Despite the company's considerable knowledge of forestry, no technological knowledge or tools have been transferred to the local communities who have been completely excluded from the project besides being offered employment with poor working conditions. The company has aggravated equity issues by purchasing large quantities of land in the area for their activities and as a result disrupted the ecosystem by polluting water sources in the production of pig-iron charcoal and impacting local biodiversity with the application of large scale monocultures (May et al., 2004).

The Nelson and de Jong (2003) study in Chiapas revealed disconcerting social and environmental results for a project that was initially conceived to provide a maximum of local community benefits. Over time, a concentration of power occurred, broader social goals became focused on carbon sales and small land holders began using a select few high carbon sequestering species, which in turn limited the possibility of multi-use benefits of agroforestry projects. Authors recommended that species diversity be part of project evaluation criteria and stressed that policy negotiations must address power issues in market relations and the influence selling carbon credits has on other land uses (Nelson and de Jong, 2003).

In Gundimeda's article "How Sustainable is the Sustainable Development Objective of the CDM in Developing Countries like India?" he analyzes data collected in over 69 000 Indian households. The author, more enthusiastically than the others, affirm that by incorporating three criteria into the project design, Land Use Change and Forestry projects represent great potential for rural communities. These criteria include assuring that a majority of revenues are directly canalized to the local poor, that short term needs of the community are balanced with the long term needs of the project, and that communities be involved in the management of the land (Gundimeda, 2004).

Rezende and Merlin 2003, an agronomist and business executive duo, report upon a Social Carbon methodology for reforestation which they developed through pilot projects with small land owners in 5 colonist villages in Brazil with funding from a Welsh gas-fired power

station. Through collaboration with state agencies, NGO's and local communities, they claim to have developed a carbon project methodology that was compatible with local social and environmental realities (Rezende and Merlin, 2003). Their research, based on a *sustainable livelihood approach* defined in terms of developing objectives and approaches for development in order to enhance the progress of poverty elimination, consisted of the application of agroforestry systems, the reduced use of fire to clear land and the generation of revenue from the exploitation of non-timber forest resources. Conceived to verify the contribution of carbon sequestration activities to local livelihoods, the methodology included consideration and evaluation of the following 6 resource types: biodiversity, natural, financial, human, social and carbon (Rezende and Merlin, 2003). Diagnostic surveys were conducted to facilitate the comprehension of local realities and environmental education was undertaken in collaboration with local schools to stimulate awareness and education on alternative means of generating income. Although no CER's were actually generated by the project, the authors affirm that carbon sequestration through tree planting have the potential benefits and indicators of the benefits for local communities and contribute towards sustainable development (Rezende and Merlin, 2003).

1.5. The Case Study of Ipeti-Emberá reforestation CDM Project

In light of the development possibility proposed by climate change negotiations, the Panamanian indigenous community of Ipeti-Emberá has been involved in an attempt to design a reforestation project in the context of the Kyoto Carbon Market. McGill University and the Universidad de Panama have guided the elaboration of the project over the past five years. Since the Emberá land ranges from secondary forest, to agroforest and pasture (Dalle and Potvin, 2003), research teams esteem that the site is ideal for a carbon sequestration CDM project. The endeavour is based on an agroforestry strategy and aims at producing and selling 'carbon credits' in order to generate revenues for various community development projects.

The village of Ipetí is populated with approximately 550 people and is located a hundred and sixty kilometres east of Panama City (Potvin et al., 2002). The local organization,

Organización de Unidad y Desarrollo de la Communidad de Ipeti-Emberá (OUDCIE), who officially sponsors the project, has invited the entire community to participate in the project elaboration because most families own land in the *Tierra Colectivas* (collective land). Since the project is still in the design phases, participation has been encouraged through the facilitation of numerous workshops, discussions and surveying activities in collaboration with research teams from McGill University and the University of Panama (Universidad de Panama et al., n.d.).

A fair part of research related to the Ipetí Carbon Project has been of a technical nature, such as the study of tree species and carbon stocks on Emberá land (Kirby and Potvin, 2004), the calculation of a carbon baseline scenario for a reforestation CDM project (Potvin et al., 2007) and the cost-benefit analysis of carbon sequestration versus cattle ranching (Coomes et al., 2007). Although none of these studies explicitly examined the social factors and impacts of carbon sequestering through reforestation, all works seem to agree that a project may only contribute to sustainable development if it is 'owned' by the host communities. Tschakert et al. (2007) did however examine certain socio-demographic considerations such as household characteristics and land use scenarios in relation to various carbon sequestration strategies. This research demonstrated that subsistence production was the primary concern for less wealth endowed families, while better endowed households seemed more open to "the 'luxury' of planting trees for environmental service provision" (Tschakert, 2007:8). As a result, families most in need of land use diversification benefits were identified as least likely to adopt and benefit from carbon sequestration activities. This reality brought authors to highlight the ethical concerns that must be taken into account when proposing community forestry carbon projects to heterogeneous communities (Tschakert, 2007).

Since CDM's contend to include a sustainable development objective, establishing the technical capacity to sequester carbon remains only part of the equation. The interests and values of the local community must also be taken into consideration when designing forestry sink projects. International Indigenous People Statements affirming their intrinsic relationship with Nature, the influence of their cosmovision on their lifestyle and their direct

dependence on the Earths elements for survival must be integrated into the conception of climate change strategies.

1.6. Research Question and Objectives

This research is concerned with the following questions: What rapport does the Ipeti-Emberá, as a poor and marginalized indigenous group, have with the reforestation CDM project being elaborated in their community? And is their world vision compatible with the underling concepts of such a market mechanism?

In order to respond to these questions, the primary objective of this research is to characterize elements of the Ipeti-Emberá social representations of the *forest*, of *development* and of the *CDM project.* The 'forest' is one of the main building blocks of Land Use Change and Reforestation CDM activities and its official definition which has been adopted by international bodies' neglects characteristics such as the quality and history of human use, the cultural diversity of forest people or even the biological diversity of the forest system (Fogel, 2004). Keeping in mind that the forest constitutes the socio-cultural habitat for many rural and indigenous communities (Smith and Scherr, 2002), it appears essential to explore local representations of the forest and to examine how they contend with internationally attributed meanings. Along the same lines of logic, since the purpose of the CDM is to deliver sustainable development, a development which unlike the forest, has no clear definition, it appears of noteworthy value to explore local aspirations of 'the development' of a better life. Comprehensively, since the project was only at the elaboration process during the time of this research, exploring the Ipetí-Emberá's social representations of the carbon project is also of interest for the information could benefit further project developments.

This process of characterization will also serve the research's second objective, which is to expose elements of a worldview that have consistently been marginalized throughout climate change negotiations. International Indigenous Organizations have officially been excluded from the process, however they have at least had the opportunity to make their points of view known through the use of public declarations and statements. Transmitting elements of the

Ipetí-Emberá's social representations through academic literature can serve as a means to diffuse the voice of a local community whose reality is pertinent to the international community's agenda.

As part of the reflection needed to stimulate social change, the goal of this research is to contribute towards a critical analysis of the UNFCCC and other international powers approach to dealing with climate change, more precisely of the Kyoto Protocol's Clean Development Mechanism. The aims is to provide examples of different realities that received little consideration during the CDM regulation elaboration process in order to question the ethics of using a developing countries land for the sequestration of industrialized nation's carbon emissions. This information may provide insight for enhanced learning between local, national and international stakeholders.

In summary the objectives of the research are to:

1) Characterize elements of the Ipeti-Emberá social representations of the *forest*, of *development* and of the *CDM project*;

2) Expose elements of a worldview which received little consideration during the CDM regulation elaboration process and which is that of the members of an impoverished indigenous community attempting to host a reforestation carbon sequestration project.

CHAPTRE II

PORTRAIT OF THE IPETI EMBERÁ

2.1. Emberá Migratory History

The Emberá and the Waounan are two groups from the same Chocó indigenous origins, differing only linguistically and both coming from the inland Chocó Department of western Colombia (Torres de Arauz, 1966). Today there are approximately 32,000 Emberá living in Columbia and in Panama they represent one of the countries five main indigenous groups with an approximate population 18,000 (Potvin et al., 2002). In recent history, the Emberá traditionally inhabited the eastern Darién province of Panama, a mainly tropical forested area (Wali, 1989).

In the 1950's and 1960's, many Emberá families migrated west from the Darién into the Bayano region of the province of Panama because of land issues with other ethnic groups (Wali, 1989). When the Pan-American Highway was extended into eastern Panama in the 70's, the country's government began the construction of a Hydroelectric Dam in the Bayano Region, thus forcing 500 Emberá, 1500 Kuna and 2500 colonist farmers to relocate (Wali, 1989) near the banks of Rio Diablo, Rio Parti and Rio Ipetí (Pastor, 1974). Three villages were established around the Ipetí River: Ipetí-Kuna for the indigenous group of Kuna, Ipeti-Colono for the colonist community and Ipeti-Emberá for the Emberá. The latter group received little compensation or recognition for the resettlement and by the 1980's colonist and lumber operators began encroaching on their land (Wali, 1989).

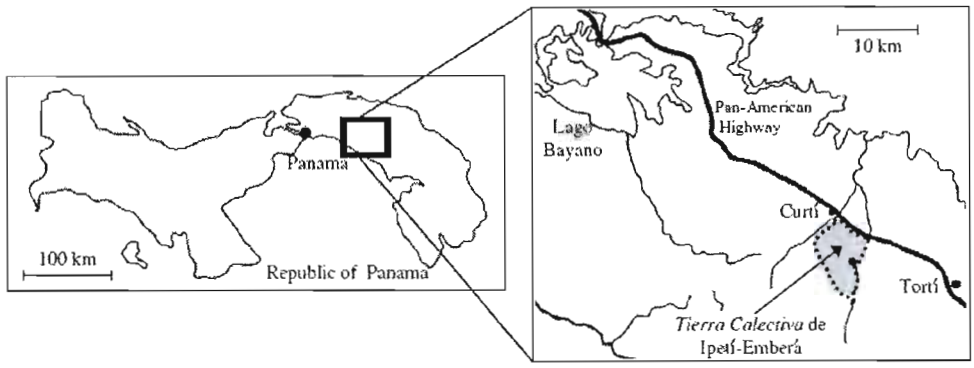

Figure 1.1: Map illustrating the location of the Tierra Colectiva of Ipetí-Emberá in eastern Panama (Taken from Tschakert, et al., 2007)

During this researchers' field study, one of the villages most notable Elders and at the time leader tells the story of the foundation of Ipeti-Emberá:

> "Before people lived in Rio Diablo, but there was no village. There was a house here and a house there, but we did not live in a group[...] I came here with the idea of making a village [...] So the children could read and write, widen their mind and not live like we did before. But everything happened so much quicker because the government built the dam over the Bayano Lake. They had to remove all the people living around the lake area. The government said we had to form a village [here on this land]. So I took advantage of this opportunity to say 'ok, now I will make my village'. I started talking to the old people, telling them that the government wanted us to live in a group. I told them 'Let us make a village together and maybe the government can help us collectively with something. If we all live separately, here and there, we won't be able to [gain] anything'.
>
> It's true, many people didn't take the move well. Many families didn't adapt well to the village because when we lived separately they didn't have to worry about cleaning the village, going to meetings or worry about their pigs and chickens disturbing the neighbours. Things are so different in a village. That's why many elders did not want to move here. They felt too much pressure; pressure about everything, even that the front lawn had to be kept clean for the sake of the neighbours. Some women had a hard time, crying all the time, because they were not used to all the meetings and having their children be away from them to go to school. And the other part of the problem was [where do you raise] animals in a village?"

Having suffered the pains of forced dislocation, the Emberá have been negotiating with the government in order to obtain the legal title to their land for over 30 years but with little success. Prior to the construction of the dam, the primary economic activity in the entire region was horticultural, but today lumbering and cattle ranching, controlled by the non-indigenous populations is prevalent and has lead to massive deforestation which threatens the regions ecology and the forests destruction is most felt by those who depend on the land for their survival (Wali, 1989).

2.2. Emberá Way of Life in Ipetí

Traditionally, the Emberá lived in small family clan settlements dispersed along rivers, migrating freely through the area (Torres de Arauz, 1966). Dug out canoes made of entire tree trunks, which are known as *piraguas,* were once the prevalent form of transportation. Houses were and still are built on stilts in order to protect them from flooding in the rainy season and from insects. They have thatched roofs, wood floors and two open sides (without walls) in order to take advantage of the cooling breezes and avoid the collection of insects inside the house. The Emberá are customarily a hunting, fishing and foraging people who practice subsistence swidden agriculture (Torres de Arauz, 1966).

The village were the Ipeti-Emberá now call home is situated in the Alto Bayano watershed approximately 160 kilometres east of Panama City (Potvin et al., 2007) (9° 00'N, 78°05'W) and is "organized as an indigenous Tierra Colectiva, territories of semi-autonomous administration" (Potvin et al., 2002: 167) but without any legal land title. The Tierra Colectiva comprises of 3, 198 ha which is divided into *parcelas* (parcels of land) which are between 1 and 100 ha. in size. Parcelas are managed at the house hold level (Tschakert et al., 2007) and customary law prohibits selling the land to individuals from out side the community (Universidad de Panama et al., n.d.). The area is an evergreen tropical rain forest with a distinct dry season with only sporadic rainfall from January to April (Tschakert et al., 2007). Whilst roughly half of the Tierra Colectiva has been cleared for fields under crop-follow rotation and pasture, the other half is still intact forest (Tschakert et al., 2007). In 2004, the Ipeti-Emberá community included approximately 550 people distributed among 71

households (Tschakert et al., 2007) with the majority being situated in the village and with a handful in nearby settlements of Curti and Ambroya. Entire extended families live together in their open-sided houses where indoor fires can be lit for cooking purposes. Although they are located near a hydroelectric dam, some 30 years later they still do not have permanent access to electricity or running water.

In their daily lives, the Emberá depend upon a vast number of plants and animals (Potvin et al., 2002). Their principal crops are plantain, corn, rice, yams, taro and yucca mostly for personal consumption but some for resale on local markets. Anthropologists esteem that in the mid seventies the Emberá in the Bayano region did not yet have a concept of private property (Pastor, 1974) and that only in the 1990's did an economy based on subsistence farming turn towards a production based on monetary income (Wali, 1995). Today most of the Ipeti-Emberá participate in a dual economy, engaging in subsistence agriculture and/or working as day labour on nearby colonist farms or for foreign tree plantation companies in order to generate the revenue needed to purchase goods with cash. The Emberá's food primarily consists of home-grown crops and small game caught in the surrounding rainforest. Some community members are also engage in the production of handicrafts for tourists producing woven baskets, beaded necklaces and wood carvings. Internal population growth and the need for cash income for education and consumer goods place pressure on the land-use strategies and contribute toward the deforestation of the Tierra Colectiva (Potvin et al., 2007).

2.3. Socio-Political Structures in Ipetí

Although, traditionally the Emberá had few political structures, they slowly began developing a system of authority in conjunction with other Emberá settlements outside the Darién region in order to strengthen their land claims after their resettlement (Universidad de Panama et al., n.d.). Today there is still no Emberá non-governmental organization (NGO) on the National level (Universidad de Panama et al., n.d.). The highest local authority in Ipetí is the village leader which is called the Cacique. The Cacique works in collaboration with the local organization called OUDCIE (Organizacion de Unidad y Desarrollo de la Comunidad de

Ipeti-Emberá) on various community projects. The creation of OUDCIE was funded by the Canadian International Research Center and supported by researchers at the University of Panama and the University of McGill since 1998 (Universidad de Panama et al., n.d.). The role of OUDCIE is to develop programs related to conservation, foster the protection and sustainable development of natural resources, sustain indigenous culture and traditions and resolve ecological problems of the community (Universidad de Panama et al., n.d.). The members of the OUDCIE are involved in the organization on a voluntary and part time basis. There are no employed or full time workers associated with the administration or management of the organization. With regards to the Ipetí Reforestation CDM project, it is the Cacique and OUDCIE who represent the community's interest in the development of the project.

2.4. Presentation of the Respondents

Although the Cacique and the members of OUDCIE appear to be enthusiastic about the reforestation carbon sequestration project, this research intention was to develop an understanding of the community's social representation of the forest, development and the CDM project. In order to do so, part of the data collection strategy included focus groups as well as individual semi-structured interviews. The Cacique 'appointed' 8-12 different village members to participate in each of the focus groups. No personal socio-demographic information was collected on these respondents. The selection of the thirteen individual interview respondents was established by attributing a number to each of the households in the community and by using a random raffle system stratified by location (Ipetí, Ambroya and Curti) and by alternating the gender of the interview candidates for each household number drawn (six women and seven men). A brief description of each respondent is presented below; however the traditional socio-demographic information collected on interview participants appeared to be less significant due to the relatively homogenous nature of the community. The vast majority of respondents did not know exactly how old they were, received little formal education and live with their extended families.

In order to preserve the anonymity of the respondents and in respect of the traditional Emberá culture, they have been given pseudonyms names representing the different tree species found in the tropical forest on the Tierra Colectiva. Next to each pseudonym, in parenthesis, is the equivalent scientific name.

2.4.1. The 'Older' Generation

Eva (*Socratea exorrhiza)*: Eva lives in a zinc roof house with her family in Curti, only a couple hundred feet away from the Trans Panama highway. She has 2 sons and 3 daughters, two of which live with her and have children of their own. Her husband and her rent out part of their land and have turned the rest into mechanized rice fields. Her husband is the primary worker as she claims that she no longer 'works', referring to working in the fields. Although Eva describes herself as old and tired, she still undertakes periodic periods of employment with the Teak Plantation Companies. *Eva is respondent 1♀.*

Padá (*Plantaginaceae*): Padá is a very soft spoken woman. She lives in the center of the village in a zinc roof house in a multifamily household. She and her husband are some of the few who still carve piraguas (Emberá long boat) by hand from entire tree trunks. They, at the time of fieldwork, were carving a piragua to be able to reach there parcel of land which is very far off but filled with plantains which they successfully sell in nearby markets. *Padá is respondent 7♀.*

Nunu (*Ceiba pentandra*): Nunu can be described as a wise old man who lives by tradition and yet has a vision for the future. He has several adult children and is multiple times a grandfather. He is actively involved with the protestant church and involved in most community activities. During the three month period over which the data was collected, Nunu was observed constantly working on the construction of a community grange, on the reconstruction of his house or in his parcel of land. He held the role of Cacique in the early years of the village in the late 70's and early 80's. *Nunu is respondent 8♂.*

Sasagara (*Bactis major*): He appears to be skeptical and stern in both his words and actions. His interview is marked by his disillusionment about the current state of affaires and the extinction of the Emberá's traditional way of life. Although he does not appear to be a believer in organized religion, Sasagara's family ties are closest to the leaders of the protestant church. He openly affirms being against the local power in place during the time of the data collection. *Sasagara is respondent 9♂*.

Kekerre jejo (*Muntinguai calabura*): Kekerre jejo Is an elderly man living with one of his children's family in a thatched roofed house. He appears to be relatively inactive and although he claims to have a passion for working the land, he says he is no longer able to do so because he is 'too old'. He explicitly admits to being unhappy and being frustrated with the young people's loss of tradition and culture. He doesn't trust the local leaders and leaves the impression that he is basically passively waiting for his life to end. *Kekerre jejo is respondent 13♂*

2.4.2. The 'Mid Age' Generation

Piquigua (*Heteropsis oblongifolia*): Piquigua appears to be very young and timid woman who lives with her husband and ten young children. They live in a particularly high yet severely deteriorating traditional Emberá house. It is situated among a dense cluster of houses near the center of town. Her husband works as a day laborer for six dollars a day and they are amongst the villages very poor. Piquigua grew up isolated in the Darién, has never been to school and only moved to the village once she married and had children. Neither she nor her husband speaks much Spanish compared to others similar in age. Since her children mostly all attend the village primary school and are learning nothing but Spanish, she has difficulty communicating with them. She is an actively practicing catholic. *Piquigua is respondent 2♀*.

Jiwa (*Astrocaryum standleyanum*): Jiwa is an outspoken middle aged basket weaver and her husband appears to be a quiet wood carver. They live in a thatched roofed house off to the side of the village hidden amongst the trees. She has several children who are past primary

school age and of which none are able to attend secondary school because of lack of finances. She is frustrated with local power structures and feels that since she is from a different family clan than the Caisique, her children have been disadvantaged in the local distribution scholarships for children to attend secondary school. *Jiwa is respondent 3♀.*

Chape (*Trema micrantha fm*): He lives out in Curti under a zinc roof near the highway with his wife and his 4 mid-aged children. Chape has turned the majority of his land into mechanized rice fields and rents out a part to a colonist farmer in exchange for rice and/or money. He is a firm believer in using the tools of 'modern agriculture' to increasing his agricultural production and to improve his family's quality of life. He is extremely preoccupied by the Emberás lack of legal title to the land. With little interest or need for contact with the families in Ipeti, Chape says he tries not to spend his time thinking about the things he doesn't have. *Chape is respondent 4♂.*

Kuruja (*Theobroma cacao*): Kuruja is a soft spoken and shy middle aged woman. She lives with her husband and 2 daughters a few minutes outside of the village and away from the highway in an untraditional yet open house. Her husband and her have several different crops, raise pigs and grow chocolate. They are one of the few families who own a vehicle and mostly use it to transport their produce to distributors. Although she says she loves her husband and children dearly, she admits to living with a feeling of depression because of the individuality and lack of solidarity in the village. *Kuruja is respondent 5♀.*

Paco (*Gustavia foserti*): This gentle but disillusioned middle age man is the father of a teenager boy and girl. He and his avid basket weaving wife live in a greatly deteriorating zinc roofed house near the center of the village. He demonstrates a strong passion for the land and a deep sadness for its degradation. He admits to having abandoned his traditional customs and to have put his faith in Jesus and God. With the assistance of a young American Peace Core volunteer, he dictated the translation of the entire bible into the Emberá language. *Paco is respondent 6♂.*

Sigua (*Nectandra sp.*): Mother of several school age children, this mid age woman is also a practicing medicine woman. Few Emberá solicit her services and most of her clients are Indigenous Kunas from across the highway, local Colonos and even urbanites from as far as Panamá City. She lives with her family and their mischievous pet monkey in a traditional Emberá house on a relatively large piece of land (compared to the vital space surrounding other houses) near the highway. She is a very nervous and giddy woman who laughs a lot and claims to drink too much coffee. *Sigua is respondent 12*♀.

2.4.3. The 'Younger' Generation

Uruta (*Oenocarpus bacaba*): Uruta is a young mother of three young children. Her husband is employed at a regular job and also simultaneously cultivates the land. They live in a traditional Emberá house far out in Ambroya with no neighbours insight. She dislikes being so far from the village because when it's rainy season, because the path to the village becomes too muddy and impassable, forcing her children to miss school. Uruata reports that she spends a great deal of time making handi-crafts in order to generate the money needed to send her children to school. During the entire period of the field study, she is the only person observed having prepared 'chicha', a traditional fermented drink made from milled corn. *Uruta is respondent 10*♀.

Midala (*Tratlinickio sp*): Midala is an educated and articulated young man who lives more than part time in Panama city. He works there as a waiter and hopes to soon find a more stable job in order to be able to help his family and child. When not in Panama City, he lives with his wife and child who both stay with his extended family in a traditional Emberá house out in Ambroya. Midala's interview is marked by outrage regarding the destruction of the land and the colonized state of his people which he says were historically 'massacred'. Midala is respondent 11♂.

CHAPTER III

THEORETICAL FRAMEWORK

The following chapter exposes the theoretical elements that have collectively constructed a framework which orientated the research process. The framework embraces the post-modern tradition of thinking, which critically positions itself in contrast with positivist sciences' assertion that there is only one perceivable reality and that it may be objectively described (La Branche, 2005). The employed epistemology attempts to avoid this positivist imposition of an absolute truth because of its invalidating effect on the multitude of realities which exist in diverse cultural traditions and social circumstances (Fogel, 2004). This precept inspired the search for elements of signification that members of the Ipetí community may attribute to components of the internationally conceived Clean Development Mechanism. By contextualizing this research in a critical and interpretative epistemology, one may better appreciate the lens through which the CDM has been explored.

A practicable framework constructed with elements from three theoretical fields has guided the examination of the relationship between a CDM activity being elaborated in the indigenous forest community.

The following theoretical fields have been selected for this study of the CDM's objectives, local implementation process and interpretation by an indigenous community:

- Post-Development Theory;
- Critical Theory ;
- The theoretical field of Social Representations.

3.1. Post-Development Theory

The UNFCCC identifies its ultimate objective as being the stabilization of GHG concentrations in the atmosphere and states that concentration levels "should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner" (UNFCCC, 2005a: article 2). The international community's preoccupation for development is also reinforced by one of the CDM's objectives to assist non-industrialized countries in achieving sustainable development (UNCCS, 2005b). The explicit concern for development associated with climate change mitigation strategies obliges this theoretical framework to critically explore development and sustainable development theory. Although we do not adhere to the ontology of this dominating discourse, we do however affirm a commitment to contribute towards positive social change (Carspecken, 1996). It is this perspective, after exploring traditional development theory, we will propose an alternative, a posteriori emerging concept to assist in the analysis of field interview data. We have designated this concept as the 'livelihood regeneration' paradigm and will further explicate its constituents in section 3.2.3.

3.1.1. Development Theory

Development emerged as the leading perspective in the post World War II era when poverty and hunger became of global concern (Sachs, 1999). Popular belief began insisting that a better life was possible for poor countries if only they underwent industrialization, invested in infrastructure and achieved a certain level of modernization (Escobar, 1995). As a result, capital, science and technology have since been prescribed as the remedy for the ailments of the less fortunate (Latouche, 2004).

Several authors (Latouche, 2004, Sachs, 1999, Sachs and Esteva, 1996, Escobar, 1995) highlight the instrumental role of the Truman Doctrine in the construction of a world vision that has oriented most international action. During American President Harry Truman's inaugural speech in January 1949, he declared that higher production levels were the key to

peace and prosperity and needed to be incorporated into the efficient management of world affairs (Truman 1949 *In* Escobar, 1995). This interpretation of development automatically categorized the various livelihood strategies and the cultural practices of the majority of the world's inhabitants as "*underdeveloped*" (Sachs, 1999). Today development has become a dominating discourse and some might even argue a regime (Escobar, 1995). It has intensified the exploitation of natural resources and evaluates degrees of civilization based on levels of material production and consumption (Sachs, 1999).

Over fifty years of development have gone by, the United Nations vowed to eradicate child poverty by 2002 and yet the problem of poverty still persists. The exploitation of the planet resources has intensified whilst the well being of people in the Majority World countries has declined (Latouche, 2004). In the name of development and poverty eradication, many self-sustaining communities have been torn apart by the preoccupation of creating economically participating citizens (Sachs, 1999). As a result, community and kinship ties have unravelled and the social fabric has been re-woven by relationships based on consumption and material accumulation (Escobar, 1995). Academics, professionals and even European and North American youth mobilized via development programs, continue to finance and implement normative strategies in order to transform the lives of the poor. However,

> "instead of seeing change as a process rooted in the interpretation of each society's history and cultural tradition [...] professionals [seek] to devise mechanisms and procedures to make societies fit a pre-existing model that embodies the structures and functions of modernity" Escobar, 1995: 52

The values, knowledge systems, loyalties and modes of governance of many "developing countries" are seen as being in conflict with the theories and practices of western economic societies (Sachs and Esteva, 1996). As a result, international interventions have often contributed to propelling many of the Majority World countries into dramatic and rapid processes of cultural transformation (Escobar, 1995).

3.1.2. Sustainable Development

In Escobar's (1995) exploration of 'development in the Third World', he describes the process through which the cosmology of modernity has led to the separation of social life into individual spheres (economy, culture, polity, society) and how each sphere dictates its own code of functioning. It is precisely this fragmentation that has permitted the economy to become a distinct entity (Escobar, 1995) rather than a component of society and upon which sustainable development has based its theory of three separate but interrelated spheres the economy, the environment and society. In this perspective, the economy conditions the relationship between the environment, which is portrayed as collection of resources to be used rationally (Sauvé, 2007a). This precept has become omnipresent not only in international environmental governance but also on national and regional policy levels (Haas, 2004). What appears to be so miraculous is that in a world with so much conflict, such a large range of social actors have been able to unanimously agree upon the merits of sustainable development (Latouche, 2004). By pledging their allegiance to the all encompassing concept, researchers, business men and politicians all legitimizes the quest for continued growth (Sauvé, 2003.). In addition, the concept is based on an important cultural bias and superimposes a western cosmology (Sauvé, 2007a). As a result, other and perhaps more pertinent visions of how society (and societies) should evolve are kept in the background (Sauvé, 2003). Sauvé (2007a) also characterizes western cosmology as being conservationist, in the sense that it protects certain elements of Nature, or 'resources', over others because of their utility to humankind. Habermas, argues that technical perspectives, such as this, are a threat to the essential essence of human life, affects the structure of human interests and ultimately serve to justify class domination (Held, 1980).

One of the greatest weaknesses in the sustainable development paradigm is the suggestion that economic growth can continue indefinitely if it is carried out in technologically efficient conditions (Latouche, 2004). Unfortunately, since the ecological impact of anthropocentric activity is growing at an exponential rate and does not permit sufficient time for Natures' elements to regenerate; our society is facing an imminent situation of major disruption

(Loreau, 2005). The complexity, uniqueness and constant evolution of each species limits humans' capacity to continually substitute disappearing components of biological diversity with technological alternatives (Loreau, 2005). Just as Mauro Bonaiuti (2001) suggests, more and more cakes can not be baked with less and less flour just because there are additional chefs and higher-tech ovens. (Nicholas Georgescu-Roegen, op.cit., 2001, *In* Latouche, 2004:91)

3.1.3. Livelihood Regeneration versus Sustainable Growth

Despite the vast political mobilization around 'development', its' failure to incorporate a socio-cultural analysis of problems began to attract critical attention in the 1960's (Escobar, 1995). Awareness that the most marginalized and vulnerable members of society were being bypassed and even disadvantaged by conventional development began to grow (Simon et al., 2003). Critical reflection of this omission gave way to a Post-Development way of thinking (Latouche, 2004). Those who identify with this ontology state that "they are interested not in development alternatives but in alternatives to development, that is the rejection of the paradigm altogether." (Escobar, 1995:215). Its tenants recognize that sustainable development is an ethnocentric western concept and in many cultures the accumulation of wealth does not equal a better life (Latouche, 2004). Improving ones' quality of life is not based on the accumulation of quantifiable material but rather on decreasing consumption, fostering community participation and critical thinking in order to benefit from nature while being cautious and keeping in mind ideas of temporal and spatial justice (Beauchamp, 1991).

As previously mentioned, this research proposes an alternative to the standard sustainable development tirade where the social, economic and environmental spheres are separate and adjustable. After a vertical reading of the data collected in the field, the emerging themes of the individual and group interviews reflect a period of drastic change that is currently affecting the quality of life in Ipeti-Emberá. These changes can be classified into three main categories of their reality: the Nature sphere, the social sphere and the sphere of the Self (the individual). The themes emerging from the interviews related to their individual identity were related to the state of social relations, which were in turn were influenced by the

changes in their natural environment, which reflects the respondents intimate relationship to the land. In this case, the three spheres are not seen as being separate, as in the sustainable development paradigm but rather, are schematized by 3 encased spheres. This notion is illustrated in Sauvé's (2001) three interrelated spheres of personal and social development. Nature represents the all encompassing sphere that impacts evolution in the social sphere and which influences the parameters of the sphere representing the individual. The *a posteriori* emerging themes reflected the essence of Sauvé's paradigm (2001) so we have adapted it for the context of this research and refer to it as the livelihood regeneration paradigm (Diagram 2.1.).

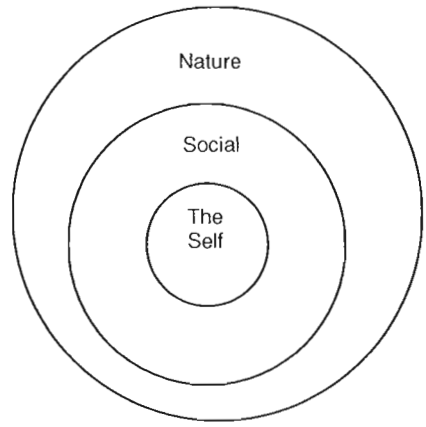

Diagram 2.1: Livelihood Regeneration Paradigm

We consider that if a project desires to contribute towards improving the lives of communities dependent on their natural environment for subsistence, an ecosystemic perspective must be adopted and particular attention should be given to regenerating the components of each of these spheres. The regeneration of individual, social and environmental components is favoured over sustainable development and its connotation of continued growth. This conceptual livelihood regeneration paradigm is used to analyse the interview data according to the aforementioned research questions.

3.2. Critical Social Theory

The term *critical theory* was initially defined by Max Horkheimer of the Frankfurt School of Social Science in the 1930's as being a radical, emancipatory form of Marxian theory. It is concerned with the examination of contemporary socio-political issues and orientated towards critical reflection as impetus for social transformation (Held, 1980). Not all critical theorists adhere to universal tenants but the principal ideas appear to "lay the foundation for an exploration in an interdisciplinary research context, of questions concerning the conditions which make possible the reproduction and transformation of society, the meaning of culture and the relation between the individual, society and nature" (Held, 1980:16). More explicitly, critical social analysis research is interested in social objects, phenomena and in this particular case, socio-environmental realities (Sauvé, 2005).

The critical orientation exemplified in this research's social ontology can further be characterized by Kinchloe and McLaren (1994):

> We are defining a criticalist as a research or theorist who [...] accepts certain basic assumptions: that all thought is fundamentally mediated by power relations which are socially and historically constituted; that facts can never be isolated from the domain of values or removed from some form of ideological inscription; that the relationship between concept and object [...] is often mediated by the social relations of capitalist production and consumption; that language is central to the formation of subjectivity; that certain groups in any society are privileged over others and, although the reasons for this privileging may vary widely, the oppression which characterizes contemporary societies is most forcefully reproduced when subordinates accept their social status as natural, necessary or inevitable [...]. (139-140 *In* Carspecken, 1996:4)

It is in this perspective that the case study of the Ipetí carbon project aims at exploring the social structure, culture and human agency (Carspecken, 1996) involved in the implementation of CDM activities. The application of critical theory also allows for the deconstruction of the power relations (Macleod et al., 2004) implicated in the international community's method of dealing with the climate change crisis by examining the rapport of exploitation humans exert on nature. Although his work date from a pre-climate crisis era, Jürgen Habermas, qualifies this type of exploitative rapport to Nature as being in direct

association with the relationships of oppression which exists between humans (Sauvé, 2005). Brazilian educator Paolo Freire qualifies a relationship of oppression as being "any situation in which A objectively exploits B or hinders his and her pursuit of self-affirmation as a responsible person" (Freire, 1970:37).

Critically analyzing whether or not CDM mechanisms reproduce relationships of oppression requires this research to articulate a well informed social and cultural criticism of Climate Change negotiations and mechanisms. Being able to do so is fundamental in order to contribute to the advancement of action around global climate change. Freire states that the capacity to critical analyze the surrounding world is a fundamental pedagogical process necessary for individual and collective evolution; in the sense that more a person is aware of reality, inequalities and situations of oppression, the better they are equipped to transform it (Freire, 1970). Although this research is concerned with the identification and critique of social inequalities, it is equally conscious of the need to contribute towards positive social change.

The concepts retained in this research's critical analysis of CDM's are governance and empowerment. The former is inherent to the study analysis of climate change negotiations and mechanisms because it represents a system used to assure objectives of security, prosperity, coherence and order on a global level (Macleod et al., 2004). With regards to the latter, considering the emancipatory aim of critical theory, this research esteems empowerment to be a coherent result for any activity that claims to have the objective of improving lives.

3.2.1. Governance

Some authors characterize governance as a concept which lies in "a conceptual grey zone between electoral politics and administrative rule making" (Martello and Jasanoff, 2004). Others see governance as the means of coordinating collective action for global problem resolution (Le Prestre and Revéret, 2000), whilst the World Bank simply considers it to be the effective management of public affaires (Macleod et al., 2004). Similar to definition of

the European Commission (2001, *In* Martello and Jasanoff, 2004), this research considers governance to be the rules, process and behaviours which affect the way power is exercised on the international level and the influence it extends on local decision making.

The examination of the global governance process exposes multiple situations, within the current context of globalization, where nation states as well as culturally identified nations, find their powers subjugated to that of global decision making bodies. It is widely recognized that global institutions, such as the World Bank, the United Nations, The World Trade Organization etc, disseminate an influential discourse and are appropriating an increasingly greater authority over the organization of global affaires:

> "The institutions and processes designed to manage the world system not only accommodates diverse national interests and facilitates cooperation; they help to construct a politics that at once crosses geopolitical borders and transcends them. Forums such as these are creating supranational norms and regulations and, in the process, [...] redefine agency, authority, leadership and even citizenship in a new domain of supranational politics." (Martello and Jasanoff, 2004:3)

The integration of this concept in this research is essential considering that CDM's emerge from what is referred to as *Global Climate Change Governance* controlled by the Conference of the Parties to the UNFCCC. Central and parallel to the concept of governance is notion of power. Although the tradition of United Nation instances insist that each country possess an equal amount of power, many authors argue that "scientific results have a disproportional influence over social, decision making, thus legitimizing politically charged decisions without sufficient public debate" (Backstrand and Lovbrand, 2004: 451)

Critical theory recognizes that unequal power structures distort truth claims made by the different stakeholders (Carspecken, 1996). In Foucault's examination of truth, he states that:

> Each society has its régime of truth, its general politics of truth: that is, the types of discourse which it accepts and makes function as true, the mechanisms and instances which enable one to distinguish true and false statements, the means by which each is sanctioned; the techniques and procedures accorded value in the acquisition of truth; the status of those who are charged with saying what counts as true. (Foucault, 1980: 152)

Foucault (1980) continues to affirm the political nature of truth in our society by qualifying it as being:

1) centered on scientific discourse and the institutions which produce it;
2) subject to constant economic and political incitement;
3) the object of immense diffusion and consumption;
4) produced and transmitted under the control of a select few political and economic apparatuses;
5) the issue of ideological struggles such as political debate and social confrontation.

He thus, establishes a Power/Knowledge correlation, affirming that the production of knowledge, which fuels a dominant discourse, is controlled by those in power (Nelson, 2003). Power, defined by Habermas as being the asymmetrical relations of constraint and dependency (Held, 1980), dictates discourse which in turn determines what realities are conceivable, acceptable and desirable (Foucault, 1980). Escobar further highlights the manipulability of discourse when stating that it "is not the expression of thought; it is a practice, with conditions, rules and historical transformation" (Escobar 1995:216).

In the context of climate change negotiations and the implementation of reforestation CDM activities, "dominant discourse portrays global emissions trading policies as technical in character and impl[ies] that they will generate few social consequences (and therefore require few social protections)" (Fogel, 2004:104). The CDM discourse uses techno-scientific knowledge regarding carbon mitigation to validate tree planting as an effective tool for climate control but also as means of responding to the need of impoverished communities. However, with that discourse in mind, it is worth reflecting upon the different interests Habermas considers as being involved in the production of knowledge. The first interest is creating power for technological control, secondly for creating an interpretation that will orientate action or finally to develop the capacity to critically analyze and free the consciousness from power (Habermas, *In* Held, 1980). In this sense, this research is concerned with detaching truth form the power of technical scientific views and attempts to

explore the CDM from the perspective of an indigenous community who is dependent on nature for its survival.

3.2.2. Empowerment

Habermas argues that ideologies represent distorted forms of knowledge or particular truth claims and affirms that in order to bring oneself closer to freedom and self determination, one must become more self-aware and develop the capacity to critically analyze ideologies (Ewert, 1991). Upon gaining this higher level of consciousness and liberating knowledge, one may then contribute towards changing the social system and embark upon a process of self-actualization (Habermas *In* Ewert, 1991). This tenet of critical theory can also be associated with Freire's *Pedagogy of the Oppressed* where he explains that in order to "surmount the situation of oppression, people must first critically recognize its causes, so that through transforming action they may create a new situation, one which makes possible the pursuit of a fuller humanity" (Freire 1970:29) .

Freire's (1970) also states that *conscientization*, which is the intensive reflection upon oneself in relation to society, is a preliminary requirement to engaging in social change. Social work practitioners believe that *conscientization* must be fostered through group-dialogue and aims at uncovering the political roots of people's individual experiences of powerlessness and oppression (Gutierrez and Lewis, 1999). It is thus through this process that people can mobilize themselves for action. Freire warns however, that there can not be *conscientization* outside of praxis (Freire, 1970), that is, outside of the retroactive use of theory and practice, reflection and transformative action (Escobar, 1995). By using a praxis approach to local or regional action, individuals and collectivities may achieve empowerment. Zimmerman's describes empowerment as "a series of experiences in which individuals learn to see a closer correspondence between their goals and a sense of how to achieve them, gain greater access to and control over resources and where people, organizations, and communities gain mastery over their lives" (Zimmerman, 1995: 583)

Many people or communities do not subjectively or objectively have power over the financial, political or social resources necessary to assure a basic level of well being (Racine and Leroux, 2006). It is often this 'lack of power' that characterizes situations of poverty (Racine and Leroux, 2006). In order to gain access to the resources needed to improve a community's quality of life, the empowerment process must develop the community's capacity to appropriate and exercise power in an autonomous fashion (Ninacs, 2001). Although Kyoto regulations do not foresee a system to regulate or evaluate the CDM's sustainable development objective, this theoretical framework esteems that projects with the pretension of improving local livelihoods must include an empowerment perspective.

3.3. Social Representation Theory

Climate change negotiations and strategies such as the CDM are particularly complex due to the large number of participant countries, who not only have varying national interests but who also present a wide range of cultures, traditions and belief structures. Value systems, which vary according to these cultural norms, influence interpretations of the world and of truth (Carspecken, 1996). Additionally, most delegates of the international climate change negotiations represent a political elite and the dominant global vision that is concerned with managing the Earth's resources in a cost efficient manner. The dominant global vision highlights certain issues while others remain underplayed (Sachs, 1999). In light of this premise, it is essential to consider the 'reality' of the local communities who have been assigned by global governance to host carbon mitigation activities.

The post-modern interpretative paradigm used in this research is based on the search for the representations people have of the objects or situations in their lives and the resulting significances they attribute to these objects. Thus, the theoretical field of social representations is used to explore the Ipetí Emberá's experience and interpretation of the world around them. In the context of this research, a social representation is considered as a system of interpretation that orientates and organizes peoples' behaviour, their relationship with others and with their environment (Jodelet, 2003).

3.3.1. Social Representations

World views are determinate factors in the production of discourse, knowledge and policy. Foucault's power knowledge theory can be applied to the study of what kind of climate change knowledge is produced, by whom it is financed and how it orientates international policy. Although Indigenous Groups have been recognized as stakeholders who may officially participate in the negotiation of the Convention on Biological Diversity, this is not the case for the climate change convention. As the United Nations' Second International Decade of Indigenous Peoples begins, the Conference of the Parties of the UNFCCC continues to ignore the impacts the changing climate has on Indigenous Peoples lands, territories, and resources as well as their demands to participate in the climate change negotiation process (IFIPCC, 2007).

In light of this omission, this study attempts to bring elements of a local indigenous community's world vision to the foreground. Considering that local communities in countries with high biodiversity are all potential setting for the implementation of the internationally designed scientific-techno clean development mechanism, this appears to be a essential and noteworthy exercise. It is for this reason that the theoretical framework of Social Representations is used to examine how the local stakeholders perceive the CDM project and how it relates to with their norms, values and social practices. This will be done by attempting to characterize the Ipetí-Emberá's rapport to the CDM building blocks: the forest, development and the carbon mitigation project itself.

The theory of SR, which was developed based on various sociological and psychological concepts, takes into account the mental structures and the social cognition of ones environment (Jodelet, 2003). Flament and Rouquette (2003) define a social representation as a way of seeing the world which shapes judgement and action.

Social representations are constituted on knowledge, theory, belief and attitudes emerging and affecting ones experience of the world (Sauvé et Garnier, 1999). Since they are socially elaborated and shared, they also orientate social behaviour (Jodelet, 2003). One of the

characteristics of social representations is that they are created by history which means they are shaped by formal and family education, the natural environment and the material use of space, objects, buildings, tools and art (Rouquette and Rateau, 1998). They are also influenced by social change, means of production and political organization (Rouquette and Rateau, 1998). Representations are developed of social objects such things, events, social movements, natural phenomena's and even ideas. Jodelet esteems that: "Social representations must be studied by articulating *emotional, mental and social* elements as well as by integrating cognition, language and communication with the consideration of social relations effected by the material, social and idealistic realities on which they intervene" (2003:58).

The study of social representations helps clarify cognitive processes and social interactions by revealing individual, interindividual and intergroup reconstructions and interpretations of a particular object (Doise, 1986). They become most apparent and radicalized in conflictual situations and especially those related to questions of identity (Doise, 1986). Since the study of social representations help determine attitudes, beliefs and values, they are useful for social intervention (Flament and Rouquette, 2003) and notably for environmental decision making, planning and action (Sauvé and Garnier, 1999).

Elements of a social representation are most often indexed according to terms or groups of terms found in interviews, responses to questionnaires, discussion groups or other written declarations. In all cases, they are accessed through words. Although there exist various methods for accessing social representations, one of the widespread techniques has been developed though experimental psychology and consists of asking respondents to make word associations to different word inductors or stimuli (Flament and Rouquette, 2003). Researcher should however be weary because certain authors such as Wagner (1994) esteems that social representations studies are not always effective in cross cultural situations because concepts are often historically and geographically bound as in other psychological and social science theories.

Critical theory recognizes different interpretations of the world and questions positivist sciences' claim of the existence of an objective reality. Social representation theory is used to explore the varying versions of reality for an indigenous community dependant on the forest for its livelihood. With the conviction that economic growth is the solution to poverty, the CDM's claims to offer sustainable development to economically impoverished Majority World countries, yet in a standardized way and with total disregard to local realities. The critical approach of this research criticizes this inspiration from development theory and applies a post development out look to improving the local livelihoods. In the following chapter, we will look at the methodology that help expose the aspects of the Ipetí-Emberá's reality and which lead to the *a posteriori* theoretical and analytic paradigm of livelihood regeneration.

CHAPTRE IV

METHODOLOGY

In view of this research's critical theoretical framework and its intention of characterizing elements of an indigenous community's social representations of the components of an internationally conceived market mechanism, undertaking a critical qualitative research strategy appears as a coherent choice. This type of research is concerned with social inequalities and aims at refining the field of social theory as a means of working towards positive social change (Carspecken, 1996). This study, like most qualitative research, considers that reality is socially constructed and that the nature of inquiry is always value laden (Denzin and Lincoln, 2005). In this chapter, the relativist ontological and an interpretative epistemological set of beliefs (Denzin and Lincoln, 2005) in which this research was situated will be explored. The case study design (Merriam, 1998) and the multi-strategy data collection approach, which included a literature reviews, participant observation, focus groups and individual semi-structured interviews, will be justified. In the final sections, the form of content analysis and the criteria which helped establish the trustworthiness of the findings will also be addressed.

4.1. Ontological and Epistemological Considerations

We have opted for a qualitative research strategy because it tends to emphasize the views of social groups with words rather than by quantification and illustrates that reality is dependent on each individual's experience of the world (Bryman and Teevan, 2005) and which includes an important socio-cultural dimension. The work was not conducted with reference to a specific *a priori* theoretical premise but rather aspires to establish certain empirical observations which can contribute towards the construction of theory.

This research is inspired by relativist ontology which is inherent to the study of social representations. This ontology recognizes the existence of multiple realities and considers that they are socially constructed (Denzin and Lincoln, 2005). This work was also

elaborated with a constructivist epistemology which esteems that social phenomena and their meanings are constantly being established by those who are who experiencing them (Bryman and Teeves, 2005). More precisely, this research adopts a post-modern constructivist epistemology which refutes the pretension of a single and objective truth and instead adheres to the idea of intellectual pluralism and the "importance of working for the interaction and mutual learning between traditions" (Jeanrenauld, 2002:47). This approach is esteemed as especially insightful within the context of this research because the Kyoto Protocol and CDM policy have been elaborated through the influence of the powerful western scientific worldview but yet specific projects are to be applied in local communities, which most certainly function within another conception of reality.

An interpretative epistemology has guided the collection of the information required to develop an empathetic understanding of the participant's interpretation of their world (Flick, 1994). Interpretive research is guided by the researchers set of beliefs and vision of the world (Denzin and Lincoln, 2005). In this sense, the interpretative and subjectivist epistemology of this study considers that the knowledge generated and understanding of reality as portrayed in the following chapters is co-created by the respondents and the researcher. Additionally, the data analysis is based on the researchers' (my!) reasoning and comprehension of the subjective meanings participants seem to attribute to the events, historical and current contexts which shape their social representations. In order to help the reader evaluate if (s)he adheres to the interpretations presented of the data collected, various criteria of rigour used in this research will be discussed at the end of the chapter.

4.2. A Case Study Research Approach

A case study design was selected for this research because of its effectiveness in the study of phenomena in their natural context and the opportunity it provides to observe the interaction of various factors in a detailed and intensive fashion (Karsenti and Demers, 2000). Scientific literature identifies multiple methods, epistemologies and approaches to case studies, however for the exploratory nature of this research, Merriam's interpretative case study approach (1998) has been adopted. This approach encourages the production of detailed

descriptions through the researcher's interaction within the context of study. The resulting holistic descriptions are ideal for what Merriam classifies as an ethnographic approach and will, though the establishment of analytical categories, foster the emergence of the respondents socio-cultural interpretation of reality. The object of this study is the rapport between a vulnerable community and a CDM reforestation project and the case study is that of the community of Ipeti-Emberá and the neighbouring settlements or Curti and Ambroya.

4.3. Data Collection Strategies

The data collection strategies were inspired by ethnographic fieldwork practises (Carspecken, 1991) but on the whole, represent a multi-strategy approach (Bryman and Teevan, 2005). The initial intention was *simply* to undertake a brief period of participant observation and than to conduct focus group interviews on themes related to the forest, development and the carbon project. As soon as the data collection process began, it became apparent that this was not realistic and would produce limited results for several reasons explained in the following paragraph. However, in order to compensate for the questionable data credibility of the data generated solely through the application of the 'premeditated plan of action', data collection strategies were multiplied, down scaled and adapted to the reality of the context of study. Collection strategies include a literature review, participant observation, focus groups and individual interviews and will be further explored in this section in relation to their *in situ* applications.

The variety of factors which influenced the need to modify data collection strategies include the gap between methodological projects and the reality of working with human beings, language and education level barriers and other impacts of unequal power relations which affect how a young, 'wealthy', North American student researcher is perceived by the members of a poor indigenous community. Other influences include conducting focus groups with people identified through a 'gatekeeper', the village Cacique and with people who seemed to be suffering from focus groups *ad nauseum* on a project which they claim to have produced no tangible results after "two years of talking, talking and more talking". Finally, it was important to be flexible with data collection schedules and ambitions because

of factors affecting the performance of the primary data collecting tool: myself! These factors included, but were not limited to, working in a tropical country, in a third language, isolated from other social science colleagues, and being immersed in totally unfamiliar and relatively challenging living conditions which I did not have the opportunity to experience prior to elaborating the research design.

4.3.1. Literature Review

The literature review began as soon as the general subject and site of study was confirmed. The first step consisted of reading all literature produced by the research team at McGill University who had been working in Ipetí on the Carbon project or other past research projects[2] Once a general overview of the site of study and the principal actors involved was established, a wider scope review of literature was undertaken on themes related to Clean Development Mechanisms, Afforestation/Reforestation and Indigenous (or local) communities. Between the months of February 2005 and August 2006, several key concepts were used in various combinations, identified in Table 4.1, to search for literature in the data banks of Science Direct, Web of Science, Current Contents, Google Scholar and ERIC.

This literature review served to identify what types of afforestation/reforestation CDM projects already existed, what kinds of research had be conducted in relation to these projects, what the various empirical and international policy issues emerged and what stance International Indigenous People Organizations took regarding the Kyoto Protocol climate change negotiations. Periodic updates of the literature review were made on the various CDM pilot projects up until February 2007. The results of the literature review are presented in Chapter I.

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[2] Dr. Potvin has been working in collaboration with the Smithsonian Tropical Institute of Panama in the Community of Ipeti since 1998 on various ethnobotany and conservation projects.

Table 4.1: Key concepts used for the literature review

Key concepts	**Associated key words**
CDM	Afforestation, reforestation Carbon sinks Local communities Indigenous Small scale Sustainable development
Climate policy	International Sustainable development Biological conservation Local communities Indigenous
Development	Sustainable development Post development Eco development
Forest (tropical)	Indigenous Livelihood strategies Communities Carbon sinks/ mitigation/sequestering
Indigenous	Livelihood strategies Food sovereignty/security Sustainable development Climate policy Community forestry Traditional Knowledge Biological diversity
Power	Knowledge Global Science
Theory	Critical Social Representations Qualitative methodology

4.3.2. Participant Observation

Before undertaking any type of data collection, Deslauriers (1991) recommends making several visits to the 'field'. Since this was not possible due to financial and distance limitations, it was decided that participant observation would be the tool to head recommendations such as Deslauriers' and would be the opportunity to develop a better understanding of "real life" in an Emberá community. Deslauriers defines participant observation as "a technique through which a researcher collects data, of mostly a descriptive

nature, through participating in the daily life of the group (s)he is studying (liberal translation: 1991:46).

Thus, I made three different trips to Ipetí, which lasted for five to six days and where I resided with the Cacique's brothers' family. During these initial visits, I ate, slept, discussed and even bathed (dressed in the traditional *paruma* in the river) accompanied by the members of my host family. The participant observation period was based on a complete immersion within the village and served to establish initial contact with community members. I explored the village by spending time at the different 'corner stores', learning to make artisanal necklaces with the women and spending time near the school house and the soccer field. I also formally participated in other biology orientated research activities related to the carbon project which included collecting photographic samples of various trees species (which explains the idea for the respondents' pseudonyms!) and participating in the establishment of a shelter wood experimental plot in the jungle with a crew of eight of the village's men.

Through out my field work, I made a point of participating in community events such as the inauguration of the newly built cultural house, the hosting of tourist activities for American students, the schools fundraiser (which involved teachers from Panama City organizing an evening of loud dance music and alcohol sales in the middle of the forest village, the protestant church's all night vigil in honour of the pastor's children's birthday, the special religious service organized by the same church during the visit of a delegation of protestant American pastors as well as the Emberá regional elections held in the neighbouring community of Pyriati. I recorded my observations of these events in a field journal, as well as my reactions to them in order to develop a comprehension of the social aspects of the way of life, local reality and community dynamics. I kept both notes that described the interactions I observed as well as notes which recorded theoretical questions, potential explanations and the links between different observed phenomena. For the purpose of this research, the participant observation data sets will not be independently and systematically

analysed but are considered as complimentary elements which contribute to refining and enriching the analysis and discussion sections.

4.3.3. Focus Groups

As part of the initial plan to gain insight on the social representations regarding the research themes, focus groups were held after the participant observation period. Bryman and Teevan define the focus group as a form of interview with "several participants [...] on a tightly defined topic and with an emphasis on the interaction within the group and the joint construction of meaning" (2005:383). Three sets of focus group questions, each based on themes related forest, development and the carbon project, were elaborated prior to arriving in the field (See questions in Annexe A). Due to the apprehended social problematic, each set questions also explored notions related to traditional knowledge, biodiversity conservation and food security.

Focus groups were facilitated in Spanish over a three week period and at a rate of two a week. Each Saturday, one thematic focus group was held with the women in the morning and later with the men in the afternoon. Cultural norms dictated that women were less likely to express themselves in the presence of the men and explain why focus groups were gender segregated. In total, I facilitated six focus groups which were held in the Casa Cultural with approximately 9 to 15 participants per meeting. Participants were mandated to participate by the Cacique, which Seidman (1991) refers to "access through formal gatekeepers".

Although Deslauriers (1991) identifies several advantages to group interviews, such as allowing the individuals to think about their responses, to remember things they forgot, provide more nuances responses, this was definitely not the case with the focus groups conducted. As Seidman (1991) predicted, the appointment of participants by local hierarchy affected the quality of the focus group interactions and the relationship between respondent and facilitator. Community members closest to the Cacique or OUCIDIE dominated the conversations and contradictory or controversial opinions were rarely expressed. As

Berthelot (2005) affirms, this behaviour demonstrates that communities are not homogenous entities and are often part of a hierarchal structure.

In addition to the fact that not all questions were appropriate or well understood, discussions were neither dynamic nor free flowing. If one participant related one idea, others rarely reiterated, supported or even developed the idea. On multiple occasions, when a participant was directly asked a question, they simply responded that their idea had already been shared by another participant. Several individuals did not say a word through the entire process and it appeared as though the provided refreshments were more interesting than the focus group questions. The men's focus group on the carbon project was rather particular in that most of the participants were involved (or family members of those involved) in OUCIDIE and although they expressed themselves to a limited extent, the participants ended up spending more time asking me about what carbon projects were, how they could make money from it, why foreigners were so interested in Carbon etc.

Once the focus group interview process was completed, the recorded discussions were transcribed in a semi verbatim fashion. Regardless of the discouraging experience, it was still possible to establish that the community was experiencing a period of important transition and was struggling with several challenges. Unrestricted open codes representing the different emerging themes were noted in the margins next to various participant commentaries for each of the six sets of transcriptions. No effort was made to restrict the number themes and once all the transcripts were coded, the varying themes were placed in the vertical rows of a table. The horizontal columns of the table were separated according to the three principal interview themes and were yet again separated in two for the corresponding male/female focus groups. Transcripts were read than re-read and each time a note in the margin indicated that a respondent referred to a particular theme, an x was placed in the appropriate row and column.

The end result was table illustrating the scope of the variation of emerging focus group themes (see Annexe B). This preliminary analysis identified that the most prevalent themes in the consciousness of the respondents were related to: changes in traditional activities, diet,

family structure and social organization, environmental degradation, agricultural difficulties, the negative impact of formal education on the Emberá traditions, the perception of a loss in culture and pride, the recent need for money and the varying impressions/preoccupations regarding the carbon project.

Due to the aforementioned methodological difficulties, the data collected through the focus groups was not be subjected to further analysis but was most definitely the source of inspiration for individual interview process.

4.3.4. Individual Interviews

Deslauriers defines a research interview as a limited and specialized interaction conducted with a specific goal and centered on a specific subject. (liberal translation 1991:142). He also suggests that researchers use this technique only once they possess sufficient information on the subject in order to assure that the interview be informative and pertinent. This means that focus groups work was not done in vain but rather that the results could be considered as entry points into the contextualized realities of the Ipetí Emberá and which could further be explored through individual interviewing techniques.

Thus, it was decided to use a semi-structured interview, a term which Bryman and Teevan (2005) refer to as a context in which the interviewer has a series of pre-established questions which are part of interview guide but where the interviewer has the flexibility to vary the sequence or ask supplementary questions in order attain further information on significant responses. Additionally, Savoie-Zajc (2004) considers that a semi-structured interaction fosters the co-construction of a rich comprehension of the phenomena of study. Care was taken to assure the equal participation of female and male respondents in the interview process in order to investigate the phenomena as widely as possible through the perspective of both men and women. However, it is to be noted that the data was not analysed with a gender differentiated lens, thus not comparison can be made between the responses given by members of the opposite or of the same sex.

Based on the prominent themes that emerged in the focus groups, two to four open ended questions were designed for each of the following 6 themes: Forest, Lifestyle changes, Agricultural practices, Food security, Community& development and finally the Carbon project (see annexe E for the interview guide).

In the spirit of the study of social representations, an additional section with a cognitive associative exercise (Flament and Rouquette, 2003) was included at the end. This consisted of asking the respondents to provide a word or series of words that immediately came to mind when presented with a stimuli word or *inductor*. Various word induction techniques can be used (continual, simple, restricted etc.) and in this case multiple, it was a 'free association without production restrictions' technique that was applied with five inductors: forest, change, desire, future[3] and carbon. Rather than rather imposing semantically positive or negative guidelines (i.e. hot-sun or hot-cold), respondents were invited to make 'free-associations'. The only criterion was that of number, which represents that respondents were asked to provide a limited number of responses per inductor, which was established as 3 responses (Flament and Rouquette, 2003). Although Flament and Rouquette (2003) describe this technique in reference to large scale studies with significantly higher respondent numbers, Flament and Rouquette assure that "an associative exercise undertaken with only a few subjects, as long as it is accompanied by sufficient knowledge of the field and a rigorous theorisation, can reveal as much as a larger scale study (liberal translation 2003:82).

Two young women, who had a higher degree of formal education than most (high school) and who had previously participated in other data collection for the carbon project, were

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[3] During the focus group process, it appeared as though the term development was not well understood and required a certain clarification. In order to explore the concept in the individual interviews, it was decided with the help of one of my assistant interviewers, to use a series of terms (change-desire-future). Even then, the notion of change often needed to be described in terms of difference and the notion of future appeared to be some what abstract for many. The assistant researcher had difficulty finding the corresponding word to future in Emberá and generally resorted to using a lengthy explanation in Emberá (which I never really knew what she was saying) when the word future appeared in the interview questions.

appointed by the Cacique to conduct the interviews in Spanish (and in Emberá when necessary) under my guidance. After a day of training and a trial interview, semi-structured interviews here held with one member of 13 of the 71 households. Interview participants were selected based on a random raffle system stratified by the household locations according to gender and the different settlement areas of Ipetí, Curti and Ambroya in order to assure avoid researcher bias in the selection of respondents (Shento, 2004). At the time of field work, the community of Ipetí consisted of 57 households in the village, four in Ambroya and four in Curti, for a total of 65 households. As it can be seen in table 4.2., nine interviews were carried out in the village, two in Ambroya and two in Curti, with seven being conducted with women and the remaining six with men.

Table 4.2: Number of Interviews per Location and Respondent Sex

Location	**Number of Interviews**	**Sex of respondents**
Ipetí	9	**5** ♀
		4 ♂
Curti	2	**1** ♀
		1 ♂
Ambroya	2	**1** ♀
		1♂
Total	**13**	**7**♀
		6♂

For the majority of the interviews, I was accompanied by one of the two assistant researchers who conducted the interview using an interview guide. I was however, able to ask additional questions, use probing techniques and ask for certain clarifications. Interviews lengths were between 47-64 minutes (see Table 4.3) . Consistent with Deslauriers' (1991) findings, some of the questions were not pertinent and the phraseology had to be culturally contextualized or

simplified. Nine of the interviews were recorded and the accompanying assistant researcher and myself made partial transcriptions of the significant elements of the respondents responses by using a spaced out interview guide (Deslauriers, 1991). Unfortunately towards the end of the fieldwork experience, the recording devise broke (!) thus, both assistant researchers were asked to participate in the last four interviews so all three of us could record the responses in the interview guide document. Upon completion of the field work, the notes from the interviews which were not recorded were immediately compiled and used to reconstruct one set of interview annotations. The remaining interviews were than transcribed into semi-verbatim[4] transcripts.

Table 4.3: Respondent Interview Information

Interview #	Recording #	Sex	Place of residence	Length (min.)	Final ID #	Name
1	133704	♀	Curti	62:15	1♀C	Eva
2	135013	♀	Ipetí	64:07	2♀I	Piquigua
3	142632	♀	Ipetí	62:32	3♀I	Jiwa
4	150131	♂	Curti	47:40	4♂C	Chape
5	160145	♀	Ipetí	52:21	5♀I	Kuruja
6	162428	♂	Ipeti	55:45	6♂I	Paco
7	105953	♀	Ipeti	56:04	7♀I	Padá
8	091748	♂	Ipeti	61:01	8♂I	Nunu
9	112706	♂	Ipeti	61:37	9♂I	Sasagara
10	-	♀	Ambroya	?	10♀A	Uruta
11	-	♂	Ambroya	?	11♂A	Midala
12	-	♀	Ipeti	?	12♀I	Sigua
13	-	♂	Ipeti	?	13♂I	Kekerre jejo

[4] Due to the fact that part of the interviews were conducted in *Emberá* and the assistant researcher had to translate back to me in Spanish, and I had to translate the responses into English, it was evaluated that precise verbatim was not necessary or even possible. For the purpose of this research, semi-verbatim represents that the essence of each of the respondents sentences was transcribed, but without taking into account pauses, original phrase syntax etc. usually indicated in verbatim transcripts.

4.4. Data Analysis

When referring to methods of examining the content of media, documents and other texts, Aktouf (1987:119 *In* Mayer and Ouellet, 1991:477) identifies six types of content analysis: exploratory, verification, quantative, manifest content, latent content and qualitative. The latter is described as a method that permits the verification of the presence of themes, words or concepts in the data content to be interpreted.

Data interpretation is a process of construction where the researcher must index and file the raw data (field notes and other documents) according to different categories (Denzin and Lincoln, 2005). In order to makes sense of what has been learned, the researcher studies the classification, make notes of different significations and interprets them (Denzin and Lincoln, 2005). By doing so, the researcher is attempting to make sense of what has been learned to be able to produce a public text that can be shared with the intended readers (Denzin and Lincoln, 2005). It is Rhéaume and Sévigny's five steps (1988: in Ouellet and Mayer: 1991) which most clearly relate the specific process followed in the case of this research :

1) Produce manuscripts of recordings
2) Carry out multiple readings of the material
3) Divide the material into themes using coding
4) Refine coding into themes, sub-themes and specific themes
5) Present the results of the analysis

After multiple readings of the transcripts, the respondents' perceptions, needs or difficulties were translated, with the assistance of field notes, into subcategories and were used to complete a first round of coding. An open or substantives coding techniques was applied (Comeau 1994, Mason, 1996) and codes remained open to continual revision and merging until the subcategories were firmly established. Deslauriers' (1991) criteria for codes were used: that they be central ideas, that they appear frequently and that they be related to the main category. These subcategories were reorganized and eventually formed the Nature, Societal and Self spheres presented in the aforementioned regeneration paradigm presented in the theoretical framework chapter (Figure 3.1.). This paradigm is a reflection of the

respondents' preoccupations regarding their tangible universe: their environment, their society and their individual and interior reality. In the final stages of coding, detailed analytical categories emerged and serve to clarify and refine the definitions of the subcategories.

After the categorization of the respondents discourse related to the semi-structured interview questions, the responses to the cognitive association exercise were tabulated and analysed separately. Flament and Roquette (2003) tend to apply a statistical examination of cognitive associations made by two (or more) populations in a comparative fashion and indicate rates of diversity, rarity, entropy, frequency and rage. However for the purpose of this study, the associations were used as the basis to construct cognitive maps of elements of respondent's social representations of the forest, development and the carbon project. The results of the data analysis according to the *a posteriori* emerging themes later served to enhance these schemas. These maps help illustrate the respondents' social representation and help contextualize the remaining categorized data.

The final step to producing the research's results will be presented in the following chapter and expresses the reconstructed reality in relation with the concepts and theory (Deslauriers, 1991).

4.5. Criteria of Rigor

Many adherents of critical theory, constructivists and postmodernist tend refute the positivist scientific criteria such as reliability, external validity, replicability and generalizability to evaluate the accuracy of their work because their lack of relevance for qualitative research (Denzin and Lincoln, 2005). Several, such as Guba (1981), have chosen to distance themselves from the positivist terminology and have opted for more appropriate measures of trustworthy research such as credibility, transferability, dependability and confirmability. These measures were used in this research and it will be explained how in the following paragraphs.

Guba (1981) identifies the measure of *credibility* as representing how congruent the results are with reality and their capacity to depict a true picture of the phenomena under study. Shenton (2004) explains that this credibility can be established by developing an early familiarity with the culture and community of study. LeCompte and Preissile (1993: cited in Merriam, 1998) identify *living among participants* and collecting data over long time periods as a means of assuring a familiarity. Although my stay within the community was only over a 13 weeks period, my research was situated within the larger research context with McGill University. The team I was associated with had developed a relationship with the Ipeti-Emberá over the past 10 years and permitted the emergence of a certain climate of trust.

Another element of *credibility* Shenton (2004) identifies is the examination of previous research findings. In the case of this research it was particularly beneficial that I had access to scientific documentation that emerged from past and current research projects undertaken in Ipetí which allowed me to develop a certain comprehension of community dynamics prior to my arrival. Shenton (2004) also indicates that random sampling, as used in this research to identify respondents and techniques of triangulation (Shenton, 2004, Merriam, 1998, Guba, 1981) also assure research credibility. In this case triangulation included using multiple strategies of data collection (literature review, document analysis, participant observation, focus groups and individual interviews) to compensate for limits of each strategy. Ideally the results would have been validated with the community members however for financial and distance reasons, this was unfortunately not possible but could be envisioned for ulterior research.

With regards to *transferability*, Shenton (2004) explains that this is being able to assure that the details of the fieldworks' context are explicated in order to allow the reader to judge between the similarities or differences of the prevailing research environment and other settings. The results must be understood within the characteristics of the context of study. To do so, one must, as illustrated in previous sections, identify who the participants were, the data collection strategies employed, the number and length data collection session and the period of time over which they occurred.

According to Guba (1981), *dependability* is assuring that the research report provides the information needed to allow another researcher to repeat the same study. Although this is very difficult to achieve in qualitative research, this represents including sections, as those included in this chapter, devoted to describing the research design and implementation, detail of data gathering and appraisal of the effectiveness of the study process (Shenton, 2004).

The final criterion identified by Guba (1981) is that of *confirmability* which signifies that the results are those related to the experiences and ideas of the informants. As previously mentioned, it would have been preferable if the respondents had the opportunity to comment and validate the results. Keeping in mind this limit and with the intention of demonstrating a certain degree of *confirmability* to the reader, the results provided in the following chapter are presented in tandem with multiple citations extracted from the interview transcripts.

4.6. Ethical Rules

Before my departure for Panama, my finalized project proposal was approved by Dr. Lucie Sauvé, my director at UQAM as well as by Dr. Catherine Potvin at McGill University. Their guidance was fundamental in assuring the ethical design of my research. I also applied for and received the certificate of approval from the Ethical Research Committee of the University of UQAM, in accordance with the Ethics Conduct Policy for Research Involving Humans (see Annexe D).

CHAPTER V

RESULTS

A majority of the research results will be presented in the initial three sections of the chapter and according to the three categories of the data analysis framework of the *a posteriori* emerging livelihood regeneration paradigm presented in figure 3.1. (Nature sphere, societal sphere, the Self sphere). This is done so in order to portray the scope and the depth of the results of the individual interviews in a tangible yet thorough manner. Each of these sections begins with a brief theoretical contextualization which introduces the category, their subcategories and their associated themes (see Table 5.1.).

The remaining results are presented in the final two sections and deal with the responses given by the respondents specifically for questions 15 and 16 of the interview guide regarding the carbon project and the word associations (See Annex C). This information is presented outside of the livelihood regeneration framework because of the specificity of the corresponding questions which rendered the results more significant when analysed separately.

The presentation of the individual interview results according to this logic begins to provide illustrate aspects of the respondents' social representations of the forest, development and the carbon project and expose elements of a world view held by an impoverished indigenous community. The respondents' discourse presented in the following pages reflects their preoccupations regarding their tangible universe: their environment, their society and their individual and interior reality.

Table 5.1: Categories Emerging from the Data Analysis

Primary categories	Subcategories	Specific themes
Nature sphere	Physical Surroundings	Ecosystem integrity Meteorological and climatic conditions Regenerative capacity
	Faunal and floral assemblage	Value Presence
	Food supply	Mode of access Sufficiency of access Security of access
Societal sphere	Social relations	Family interaction Community interactions Economic interactions
	Cultural relations	Education Language Tradition Occupation
	Political relations	National government Land rights Local government
The Self sphere		Self esteem Feeling of power Self actualization

5.1. The Nature Sphere

In the document "Perfil Indigena de Panamá" (Alvarado, 2001), the country's Ministry of Governance and Justice characterizes indigenous populations according to five traits. Two of these include "their profound *affection* for and *attachment* to their ancestral territory and its natural resources" (emphasis added) as well their land use strategies which are "principally orientated towards subsistence" (Alvarado, 2001:13). These qualities characterize a world view which contrasts with Judeo Christian beliefs where humans are separated from nature (Stevenson, 1998, Berkes, 1999). They reflect an indigenous worldview where nature and culture are considered as binary (Rikoon, 1996).

Since the Ipeti-Emberá society still depends on the tropical forests' vast diversity of plants and animals in their daily lives (Potvin et al., 2002), "Nature" is the first category which emerged helping to classify the interview data. With the specific intention of disassociating

the concept of "environment" from positivist-scientific interpretation, the use of the word Nature (with a capital N) aspires to depict a category with a holistic scope. The immediate nature surrounding the Emberá is the tropical forest and they often refer to it as *el Monte* because of the mountainous topography of the region.

In order to justly capture the multidimensional representation an indigenous society holds of Nature, it was essential to break the category down into subcategories. The corpus reveals that the forest is not only a physical environment composed of an array of biodiversity but was also undoubtedly linked to their subsistence. Thus, the three (3) emerging subcategories presented in this study refer to the various aspects of the *Monte*. The first is the 'Physical Surroundings' and is followed by the 'Faunal and Floral Assemblage'. The third subcategory, 'Food Supply', however differs in form from the others as it is a product of the previous two combined with the respondents traditional interaction with Nature. This subcategory, slightly more analytical in character, embodies an added value of portraying the respondents' specifically 'indigenous' understanding of Nature.

5.1.1. Physical Surrounding Subcategory

Three interrelated themes subsumed in the physical surrounding sub-category are *a posteriori* specific themes which emerged from open coding and include the *ecosystem integrity*, the *meteorological/climatic conditions,* and the *generative capacity.*

5.1.1.1. Ecosystem Integrity

The most prominent image projected in the respondents' discourse regarding the ecosystem's integrity is one that reflected an important state of degradation. When asked if there had been any changes in Ipetí over the past ten years, Sasagara asserts that "the earth does not give like it used to". Kekerre jejo explains that today she no longer works the land as "the result is not worth the effort because the quality of the earth has changed". Kuruja words indirectly evoke an experience of deforestation: "It is very different. Before, the *Monte* was closer and now it has changed. The *Monte* is far and even the trees are not like they were before". Midala is more accusatory and demonstrates a young man's feeling of injustice

when he says: "There is so much change today. The rain has changed, the sun has changed. Before there was so much rain, but no longer because the forest has been emptied. Everything has changed in the Cordillera and the river does not grow as it used to". Sigua, the medicine woman also mentions river related issues: "There are many things that are different today. There is so much illness related to the water from the river. One can't just drink water from the river like we used too". When asked what things worry him, Jordon identifies soil erosion as his primary concern:

> Today there is preoccupation for the soil. We worry about the soil. Sometimes when one sows seeds and nothing is born. And that is really something to worry about. That's when the land is useless. When the soil doesn't give produce, then one is left without food.
>
> These days the soil doesn't have enough sand (topsoil) and so the seed dies. Nothing germs, bananas don't germ, corn doesn't germ, rice doesn't germ, yucca doesn't germ, yams doesn't germ.
>
> You know, it really has to do with the quality of the land. There is land that is just no longer good for anything. Then there is some land far in the hills that is just natural, nothing has happened there.

5.1.1.2. Meteorological and Climatic Conditions

The second theme associated with the physical surroundings subcategory is the meteorological and climatic conditions. Midala and Jiwa, for example, both claim to observe altered rain patterns. The latter explains that her family "didn't plant much this year because the fields burnt very poorly. You see, when it was time to burn the fields, the climate advanced and the rains came early". Padà reports diminished rain quantities which she associates with deforestation:

> Well sometimes when you plant something and its cool, it will grow. But these days it's very hot so things don't grow as much. Everything has changed, sometimes I worry when I see people cutting down so many trees. In the forest it is supposed to be cool...but it is not anymore because so few trees are left. All the tall trees are gone and now it's so hot. The rain doesn't come when it's supposed to and when it does there is barely any rain compared to before.

Nunu also claims a change in precipitation rates since the community's settlement in Ipetí and declares that: "today there are too many infestations and drought also because we have too much sun. Before 1979, I saw so much rain in the winter, at times we couldn't burn the planting grounds. But now, now the fields just dry up".

5.1.1.3. Generative Capacity

When questions regarding agricultural practices were posed, many respondents reported having significantly reduced yields (Eva, Piquigua, Jiwa, Kuruja, Jordon, Padà, Nunu and Sasagara). Padà says that "before we used to work and get so much produce we could sell...now I planted three latas of rice and we were not able to harvest much". Eva shares her bewilderment when she says "I don't understand why yucca begins to grow and than dries up. Part of my land doesn't work anymore. I worry about why nothing grows on my land anymore". Jordon dismally questions his continual cultivation efforts: "Why should I plant? The earth is no longer worth anything. When you plant, you work and you don't get anything....You work and nothing is born". Explaining that many have abandoned hope in the earths' generative capacity, Piquigua states that "there is so much 'plague' across the land that people just don't work anymore. The land is not able to produce as much any more".

Several respondents referred to 'the plague' as a prominent culprit of the lands dwindling generative capacity (Piquigua, Kuruja, Jordon, Sasagara, Uruta, Midala, and Kekerre jejo). However, it is unclear what exactly 'the plague' is as the term seems to be used interchangeably for insect infestations, plant diseases and rats (or other seed eating animals). It is noteworthy that neither of the Curti respondents practicing large scale agriculture mentioned problems with the "plaga", probably because of the recent use of industrial herbicides and pesticides. With the exception of Chape, the respondents unanimously evoked, with concern, a dramatic change in their physical surroundings.

5.1.2. Faunal and Floral Assemblage

Value and presence are the two themes selected to organize the respondents' reflections regarding the faunal and floral assemblage of their territory. The former theme can be interpreted in terms of the usage, relative worth, or importance of the different plants and animals; whilst the latter aims at including notions such as the existence, the proximity and the quantity of these species. These themes are retained because they are part of the common reality depicted in all of the interviews: because of declining plants and animal quantities, the respondents are being forced to abandon traditional practices in exchange for those of modernity. When exploring the data presented in this subcategory, it is essential to bear in mind that cash currency[5] was only recently integrated into the villagers' day to day life.[6] Furthermore, at the time of data collection, access to cash was still limited for many of the villages' residents.

5.1.2.1. Value

The different values attributed to elements of the faunal and floral assemblage are primarily related to basic subsistence needs such as food and housing. Although the data revealing the relationship between food and Nature will be presented in the following subcategory section, for the sake of thoroughness, two aspects of the biological diversity's value should be named in the context of the present subcategory. First, all the respondents with the exception of Eva, mention the importance of wild animals for the vastly preferred consumption of meat. Secondly, with the exception of Eva and Chape, who have both turned their land into mechanized rice fields and Midala who works primarily in Panama City, all of the respondents refer to the backdrop of the tropical forests' lush vegetation as the place of work and the ideal setting to practice traditional shifting cultivation[7].

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[5] The Panamanian currency is the American dollar.
[6] Refer to chapter 2.
[7] In Tschakert, Coomes and Potvin 2007, p. 808 "Once regarded as a singularly destructive and

With regards to the value of trees, most of the 'older generation' respondents (Padà, Nunu, Sasagara, Kekerre jejo) along with Jordon, all indicated that they serve as the construction materials needed for traditional Emberá houses. While referring to trees such as wagara (*Sabal mauritiiformis*) and jira (*Socratea exorrhiza*) high quality wood used respectively for walls and the floors, Sasagara affirms that "before [they] just had to go into the *Monte*, get what [they] needed and [they] could build a good house." Jordon and Padà explain that the disappearing penca (thatched palm leaves) is the ideal material for roofs as it keeps the houses much cooler than the large sheets of zinc that are becoming more and more prevalent in the community.

Although fauna is most often directly represented as food source, a few comments illustrate that they, along with the plants, are inherent to the forests value. For example, Padà says:

> Before, if you were sitting here, you could see deer down below. But no longer. At times we would be bathing and we would see a deer. Or a wild boar would be just beside us, screaming [...And now] there is no longer any mountain, everything has left and the wild boar can not even be seen.

Sasagara also attributes importance to animals in terms of his identity. When asked to describe what comes to mind when he thinks of the forest, he declare:

> Agouti, rabbit, deer, wild boar, monkey! I feel good. In the *Monte*, we can go hunting for machumonte. There are snakes. I love going into the mountains because I was an expert hunter when I was young. That is what I lived for, going in the *Monte*.

Jordon seems to value the forest as a unit. He shares that the grass, the mountains and the soil make him feel good. Nunu also shares an appreciation of the forest as a whole when he

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unsustainable practice, swidden–fallow agriculture is now considered to be a key element of peasant farming portfolios with the potential for sustainable development and enhanced livelihoods among the rural poor (Abizaid and Coomes, 2004; Coomes et al., 2000; Toledo et al., 2003; Vosti and Witcover, 1996)".

says that it sacred for everything in the *Monte* protects him and provides a fertile area to produce all the elements he needs to live. He also adds the reflection that "without a forest there is only a desert". In much of the same posture, Jiwa also expresses the same veneration for Nature's components when she reveals her bewilderment of young people: "I don't know why [they] don't want to work in the mountain, there is so much out there! Why don't they want to work on their own land? There could be such ease to work ones land, planting trees, something that could improve the year".

Over the past two decades, a significant portion of income generation for women has been incurred through basket weaving using a palm tree locally known as chunga (*Astrocaryum standleyanum*) (Potvin et al. 2002). Granted that the formulation of the interview questions may not have directly prompted the subject, it is curious to note that none of the women who were observed weaving baskets (Banana, Jiwa, Sigua, Uruta) mentioned anything about the use for or the presence of chunga palm in the surrounding area. In fact, only Uruta and Sigua actually mentioned that they wove baskets. This omission contrasts with participant observation experiences where several admitted to purchasing the chunga because it was increasingly difficult to find in the Tierra Colectiva. Another questioning omission, which might again be attributed to ill adapted interview questions, is Sigua, the medicine woman's, total lack of reference to the plants she uses in her traditional remedies.

5.2.1.2. Presence

With the exception of Eva and Uruta, all the respondents spoke with resentment of the significantly lower plant and animal numbers in the area. Although Piquigua does not directly refer to the fauna or the flora, she evokes the depletion of the lands natural prosperity: "Life was better than now because before we had silver, gold and such wealth. And now there is nothing, everything has finished. There have been so many people that have come here and taken everything. Now we are left with nothing". Sigua says that there are "no more animals left in the forest and Padà, describing the same 'emptiness' when she says: "From here, it looks like there are trees in the forest but once you are there, you see there isn't anything left [...] If there is no montagna (forest cover), where are you going to go hunting?". Kekerre jejo explains:

> When we arrived to this area, there was forest everywhere. Now all the trees are gone. Before we used trees to make our houses, but there are none left. And we used to use penca for our roofs, but there is none of that either.
>
> Before, we used to live well, back when we lived in Rio Diablo. At that time there were animal everywhere. But now there is not a lot of food around. Before, we used to be so happy, but not anymore. I felt so bad when we moved from Rio Diablo to come to this village. I don't feel good because there is no food here.

Since the community has a high reliance on the surrounding biological diversity, one might attribute with the decreasing specie numbers with the Emberá lifestyle. However, Nunu and Sasagara identify large scale deforestation as the primary cause of not only the deteriorating faunal and floral assemblage but also for their society's dwindling culture. Sasagara explains:

> Before we used to eat a lot of plantain, yucca, otoa, yam, rice, but not anymore. Now there is only a little of everything. We used to eat turkey, rabbit, machumonte, wild boar. But no longer because they have cut down all the forest around us and now the animals have left. Also, today there are many more people hunting these animals [on our lands], so there are less of them.
>
> Oh, before there used to be so much rice, corn, plantains...but now there is nothing. Now we don't eat animals from the mountain because there are all gone. And that is one of the reasons why we are loosing our culture. Because there is nothing left in the mountain. There is no jira, no penca for the roofs to cut. And there

5.1.3. Food Supply

Molina (2002) and Dehollain (1995) studied household food security in Latin America according to four considerations: access to food, sufficiency of caloric and nutritional intake, vulnerability to hunger and time (chronic or cyclic hunger). A cultural dimension can also be added to food security since it is important to not only have a sufficient quantity of food but also to have access to culturally appropriate and appreciated foods (Mascolo et al., 1992). Studies demonstrate that that food consumption habits reveal cultural and societal facts as well as relate historical and economic realities (Mascolo et al., 1992). However, for the purpose of this study and the presentation of the results regarding the respondents' food-

Nature relationship, which is characteristic of indigenous societies, the following three themes have been chosen: mode of access, sufficient access and security of access. It can be noted that the responses regarding the food supply are fairly homogenous and illustrate a common reality.

5.1.3.1. Mode of Access

The respondents unanimously describe working the land and/or hunting as the preferred means of accessing food but also as fulfilling occupation. For example Piquigua says that when she thinks of the mountain, she thinks of working, having food to offer her children, and feeling good. She says "it's better in the mountains because I am closer to my work". However, varying degrees of anxiety can be apprehended in the interviews because this traditional of access to food is endangered by the degradation of the natural environment. Uruta says she doesn't understand why the earth has changed and why "now you have to plant a lot to get a little". All the respondents explain that they loose so much of what they sow and that the animals have almost disappeared.

Jiwa says that "now it is very difficult to find wild meat: "[If you want meat] you have to hunt by night and that's dangerous because of the snakes". Most of the respondents report planting less in the past year for various reasons. One of the common factor influencing agricultural practices is discouragement caused by the fact that often what is planted does not germinate, is eaten by animals or is lost to infestations. Sigua explains that before she would plant one lata (large can) of rice and that in the past she could harvest twenty back but that this year the return was only four latas.

Only Chape with his rice fields and Kuruja and Uruta claim to have increased their agricultural effort and yet the two women state that they do not expect that this will alleviate their hunger.

The lack of finances required to purchase seed and the immediate need for cash also influence agricultural efforts thus affecting the access to food. Like many others, Piquigua explains that in order to feed her family, her husband has to hire out his services for 6$ a day

working in a large land owners fields, but that it is still not enough. To feed his four children, Midala works in Panama City and Eva, Piquigua, Jiwa, Jordon and Padà work in the Teak plantations[8], also reducing their availability to take care of the crops.

Many respondents explain how purchasing food has impacted their diets. For example, Chape describes that his families eating habits have drastically changed because access to food now depends on access to cash.

> We eat differently because our way of living has changed. Sometimes we can eat well but other days not. It depends if we have money or not. If there is money, then we can buy good food. But if there is no money, we just have to eat rice. We don't always have the cash to buy food so we have to find something to eat.

Padà says it's been years since she as eaten meat and that her youngest child doesn't even know what meat is. Several respondents express their disdain for industrial meat and foods (Sasagara, Kuruja, Sigua and Uruta). Uruta says that she some times has enough money to buy chicken from the store but quickly adds: "but you know chicken has no taste". Kuruja calls chicken tasteless next to wild meat and is dishearten when she shares that her family eats often has to eat inexpensive store bought foods such creamed wheat and flour. Sasagara complains that all the change has not improved his life and has brought nothing but 'mala comida' (bad food).

5.1.3.2. Sufficient Access

All the respondents claim to have an insufficient access to food. Uruta says that her husband and her children only eat a little and that today their diet mostly consists of rice, yucca and plantains, which is in stark contrast with the abundance of her diet as a child. Sigua, the

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[8] These commercial teak plantations are owned by foreign companies. Working condition are grim: workers often do not have contracts, working hours are long and beginning at 5 am, the work areas are deforested zone where the sun hits hard and the workers do not have access to proper solar protection and rest causing frequent cases of sunstroke and fainting. Many workers claim that they were not paid for all hours worked but since most can not read, they have difficulties defending their rights against the company that provides them with at least some access to money.

medicine woman shares that although she doesn't like spending her money at the store, she has no choice to purchase many food items because there is simply not enough food. Jiwa shares her reality in frustration:

> The food has changed. Sometimes the produce comes out tiny or the production quantities are so low. Now we eat less. Sometimes we don't eat at all. Sometimes I spend the whole day with out eating until we find some money. Passing the whole day without breakfast. Do you think that is a way to live? I ask myself why this happens. Because we do not work in our own fields. Sometimes I tell that to the kids...

Nunu explains the no-win situation related trying to be self sufficient:

> I don't feel well, I worry like I said, one works hard and nothing is produced. The family is big and there is not enough food. We have no money to buy food. This worries me a lot. There is nothing we can do about. Here is an example; we have always enjoyed raising our own chicken and pigs. But now we can't raise chicken because I don't have enough maize to feed them. If I plant maize, only a little comes out. And so one can not have very many chickens, because they need a lot of maize and the same is true for pigs. One would like to have lots of pigs, but the earth doesn't give enough produce to feed them. Which means that we can only have one or two pigs and a few chickens here and there. That is just not profitable for a family.

5.1.3.3. Security of Access

Although many respondents feel that producing their own food is the ideal situation, as demonstrated in the previous sections, security of the access to food depends on access to seed, the agricultural conditions and increasingly on access to money. For example, Padà says that she wasn't able to collect seeds from last year because the crops were poor and that she did not have enough money to purchase them. Piquigua demonstrates a mother's distress when she shares that she doesn't know what to feed her children when the crops fail. Early rains and unevenly burnt the fields left Sasagara's family without enough food for several months. Midala explains the harvest cycles and explains that hunger is more prevalent during specific times of the year: "There are months where there is more food than others such as in October. In October there can be an abundance of food, but for example in march and April, people are hungry because none of the produce is ready for harvest".

5.2. Societal Sphere

The quality and the nature of various societal relations are reoccurring themes extremely present in most interviews. Although the information collected remains the personal impressions and feelings of 13 individuals in a society of 550 people, the information remains a reflection of the various opinions which seem to be present in the community based on the different participant observation experiences. Many authors who have explored small scale CDM projects esteem that it is essential to assess a community's social dynamic when undertaking such a project because success depends on broad community support (Smith and Scherr, 2002). This societal assessment which should include considerations such as a community's social organization, degree of cohesion, needs, assets, aspirations and way of life, amongst other things, appears to be of even greater importance especially if the project aims at fostering sustainable development; a notion that theoretically includes attention to social wellbeing (Smith and Scherr, 2002)

The interview data related to the societal sphere refers to and can be organized under three main subcategories: social relations, cultural relations and political relations. Some may argue that this division fails to include the economic considerations. However, this research's epistemology considers that the economy is not an entity exterior to social relations but is rather an integrated element of society which represents one of the spheres of human activity (Sauvé, 2007b). For this reason, the economic relationship is placed under the social relation category.

5.2.1. Societal Relations

The ideas which have been selected as the organizing themes of this subcategory are *family interactions, community interactions* and economic *relations*. Although 'relationship to money' contrasts with the former two themes, the data corpus reveals a relatively new relationship that appears to have a considerable impact on the social organization of the Ipetí Emberá society. Once again, the ensemble of data presented in the social relations subcategory depicts a society in the midst of extreme transition.

5.2.1.1. Family Interactions

One of the significant changes preoccupying the respondents is the change within the family organization. Eva, for example worries about leaving the children alone now that she has to work away from home in the industrial plantations and several respondents say that they feel that that children are no longer well looked after by their parents. Piquigua and Nunu attribute the recent change in parent-child dynamics because children no longer help their parents with the agricultural work. Nunu observes that since young people began studying in Latino schools, their parents no longer train them to 'work':

> ...it's because of the education system that many parents don't take there kids to fields anymore, so the kids cool off. And then when the children stop going to school, the parents try to force them to contribute to working the land and the children refuse and take off to the city. In my time, it wasn't like that. Our parents took us to work everyday so we developed a love for the work. I think it's possible to work the land and study at the same time...hopefully it is.

The interviews seem to suggest that in general, there is less time to work now that both the children are away at school and the parents are away working in the teckales. Uruta recalls when she was younger and lived with her parents: "There were so many more people around to work and we were able to produce more food. Now it's just my husband and I help sometimes, but I have to make baskets to make money in order to send my son to school".

5.2.1.2. Community Interactions

The Emberá were traditionally semi-nomadic people who appreciated the freedom to move around and who lived in small family clans. Living sedentarily in a multi family village does not appear to be a well integrated phenomena as many respondents express a discomfort with this form of organization. Sigua and Jiwa who technically live in the village yet on opposite and retreated ends, both admit to prefer living on the edge of town. Jiwa says that she liked living out in the forest alone: "I don't know why. That is how my father raised me. Far away in the *Monte*, then when I married and had kids, we had to come and live here". When asked about village life, Kekerre jejo bitterly responds: "I did not grow up in a village, I like to live alone out in the *Monte*. I dislike all this noise around, kids go around stealing from houses and we have a bad leader, I don't believe in this village system, nothing works and I don't

have hope". Sasagara reminisces about his lost freedom of living in the mountains and also conveys a dislike for village life: "When you are far away and alone, you can leave your animals free to roam around and they have space. I had 30 pigs that I took care of and that is what I gave to my children. With that, I could buy what ever it was that I needed". Only Uruta, living out in Ambroya and the youngest of all the interviewees, explicitly expressed a desire to live in the village: "I would like to live in the village, but we don't have land in the village. We would have to buy some but there is no space and we don't have the money".

Another important factor influencing social relations is several respondents' perceived state of disharmony in the village. Most of the respondents living in the village (Jiwa, Kuruja, Jordon, Nunu, Sasagara, Sigua and Kekerre jejo) and Midala, who lives part time in Panama and part time in Ambroya, express a concern about division within the community. Midala affirms: "There has been change because when the village started we were more united and there was more harmony. Now we are more divided and we have lost our teachings". Jordon brings the observation to an emotional level when he says: "One feels bad when friends and neighbours are fighting. When I see this neighbour over there fighting, I feel bad in here (pointing to his heart). Although this is a good village, this is one of the problems it has."

Sigua does not like to gossip with the people in the village about the problems, says that she likes to live a quiet life off to the side of town because there are too many conflicts in the village". She also says that there are "always problems between the women who are competing to sell their handicrafts. They are always fighting between themselves. They are jealous of those who sell more handi crafts than others". Several respondents mention the poor organization within the community (Sasagara, Nunu, Sigua, Kururja and Midala). Kuruja demonstrates frustration towards the lack of solidarity between residents when she explains that they do not have continual access to water because the aqueduct system keeps breaking down and no one is prepared to repair it unless they are paid cash to do the job. Further along in the interview, when asked about the things she appreciates in the village, she reveals a great sense of sadness:

> Is there anything that makes me happy? No not really. Before I was happy, even if I had nothing, I was happy. Why? Because I had my family *(in the sense of extended family)*. And now I have everything, yet I feel alone. I mean I have my husband and children but that's it. There is no joy of sharing. I worry about being sick because if I get sick, there will be no one around to help. And in the village, we used to share. But no one shares anymore. There is division in the village, there are problems and there is no happiness like before. Now there is more envy between neighbours. Envy about who has more, who has more money. And when you come, they don't have time to talk. Before, it wasn't like that, we used to share. But now that there is school and the church, people are more divided. It's like these things closed their minds because before we had nothing and we shared.

Nunu interview is also marked with a great regret towards the community's lack of unity and collective vision. He relates his experience with the latest 'community' project:

> I am building a GRANJA, but it's a granja for a group. But since there is no group to help, I have to do it all myself. I have to be there everyday. So this leaves me little time to work. And I don't have money to pay someone to help me work on the granja and on my land.
>
> I am one of the partners of the granja, but it is for the benefit of the whole community. There were others who were supposed to help build it, but they have all left. The granja is supposed to help for the future. But we need to have people working as if it were their own work. But in our society we have many problems. Sometimes one comes to work, sometimes it's another and you have to redistribute the benefits equally, because if you don't, then there is discussion. That is why if the granja doesn't work on a collective system...it won't work.
>
> That is what division is. People say why would I go and help this person. Now they prefer to go and help people from outside the village, the *Colonos*, because when they help those people, they get money for it. And we don't have any money to give to somebody who would help us. If we looked at the situation properly, we would see that if we worked hard, we would have something to eat and something to sell. But people don't think like that, they just think of money.

The various responses to questions 10 and 11 of the interview guide which asks respondents to identify the community top 3 strengths and difficulties are illustrated in the following tables. As can be observed in Table 5.2. having access to a health center and a primary school in the village are seen as the community's primary strengths and to a lesser degree other community projects such as the development of tourism and the collection struggle for

land title. This indicates a certain interest and appreciation of collection action and infrastructure that has the potential to improve their lifestyle.

Table 5.2: Identified Community Strengths

Respondent / **Identified community strengths**	Total frequency	1 ♀	2 ♀	3 ♀	4 ♂	5 ♀	6 ♂	7 ♀	8 ♂	9 ♂	10 ♀	11 ♂	12 ♀	13 ♂
School	11	*	*	*	*	*		*	*	*	*	*	*	does not see anything positive about the formation of the village
Health Center	9		*	*	*	*		*	*	*		*	*	
Development of tourism	3								*		*		*	
Administrative office	2							*		*				
Craft Shop	2	*									*			
Collective action for land title	2				*							*		
Village shop	1		*											
Village aqueducts	1					*								

However, when asked about the community weaknesses, Table 5.3 shows that it is precisely quality of those collective relations and social infrastructure that seems to be criticized. This seems to indicate a lack of harmony and capacity of action within the community.

5.2.1.3. Economic Interactions

As mentioned, the need for money is one of the most flagrant changes depicted in the interviews. There is a general consensus that although people now have access to money, the general quality of living has deteriorated (state of the houses, access to food, social relations). However, this is not the experience of the two respondents living in Curti, Eva and Chape. Eva for example claims to have a better life now that she rents out part of her land, cultivates mechanized rice fields and works in the teckales. When asked which is more difficult, working the land or in the teckales, she responds that "it's less hard to work in the teckales because you know you get your pay check every two weeks and you know that you

Table 5.3: Identified Community Weaknesses

Respondent / **Identified community weaknesses**	Total frequency	**1** ♀	**2** ♀	**3** ♀	**4** ♂	**5** ♀	**6** ♂	**7** ♀	**8** ♂	**9** ♂	**10** ♀	**11** ♂	**12** ♀	**13** ♂
Absence of legal land title	7	*		*	*	*			*		Says that she is unable to answer because she does not live in the village	*		*
Social division	5					*	*			*			**	*
Community leadership	4	*		*						*				*
Culturally appropriate education	2				*					*				
Aqueducts	2		*					*						
Hunger	2			*								*		
Roads and electricity	2							*	*					
Access to education	1											*		
Housing	1		*											
Latrines	1		*											
Change in work ethic													*	

have more money, it's that I have more expenses. And with children in school, that costs more money". The relatively new need for money because of the cost of sending their children to school is a heavy weight mentioned by several of the respondents and explains why some women spend their days weaving baskets to sell to tourists (Eva, Jiwa, Chape, Uruta). Eva shares that she is constantly worried about the money because sending her children to school depend on it: "Look at this daughter of mine. She had to stop going to school because we couldn't afford to pay her. So she had to stop and look for a job. It's always a worry about money". When asked what she needs to improve her life, Uruta says what she needs most is somebody to buy my baskets so she can live because she needs money to help her family and send my son to school.

Jiwa expresses regret about her incapacity to earn enough money to send her children to school:

> One looses his autonomy when he needs something, like now with the children in school. Now we HAVE to sell two quintal or three quintals of name or yucca, because that's were money comes from. Because of the lack of money, my children had to stop school in the middle of their education. And I have a lot of children. Look, I have this little girl who is crying to go to school...but with what am I suppose to send her. There is nothing. So she says ok mom, because you wont let me study I am going to get married. But things aren't like that. We don't have the ease in finding money to send her. If I had the money and worked in a company, I would send her. And than my other son, he also wanted to study but I couldn't afford it either. So he left [...] I don't even have the money for their bus ride to school. And that is the story of all the kids in this house.

Not only is this new dependence on money a heavy responsibility, but some respondents also express frustrations about the situation (Nunu, Jordon, Kuruja, and Jiwa). Kuruja says she feels bad and is frustrated because before they worked to produce the food they needed to survive but now they have to work harder and harder to plant larger quantities of produce in order to sell them in exchange for money even if it means selling at a bad price. Jordon also demonstrates exasperation: "So now to survive, can you imagine, my wife has to weave these baskets! And she has to stay in house all day. And I have to work far, far away in company plantations. To have what kind of life? When I am in the house, she is always weaving". Nunu worries about the short term vision which characterizes the quest to make money: "They don't think of working or leaving something to their kids, or of ways to make the village better. Young people these days are just working over there (in the plantations) to make money, without thinking of the land. They just work for money". Piquigua interview does not indicate her opinion on the subject and the eight other interviewees seem to consider that more money could give them a better life (Eva, Chape, Padá, Sasagara, Midala, Uruta, Sigua and Kekerre jejo). However, Padá's perception differs from the seven others in that she sees working in the plantations for money as a temporary arrangement that will permit her land the opportunity to rest.

5.2.2. Cultural Relations

As demonstrated in the previous sections, the degradation of the environment and the immediate need for money are factors heavily impacting the respondents' traditional indigenous lifestyle. In this category, the data presented suggests a third element influencing the Ipeti-Emberá culture: institutionalized education. When speaking of their culture, the respondents tend to refer to their language, their historical occupation of hunting and cultivating in the forest and also of their traditions related to dances, body painting and their vestmental attire. Thus, the themes used to organize the data classified in this cultural subcategory are education, language, tradition and occupation. It is difficult to associate the respondents discourse to only one of the aforementioned themes because they so closely interconnected.

5.2.2.1. Education

It is evident that access to education is perceived by the majority of the respondents as a means for the younger generation to improve their living conditions. For example, when asked to name three of the community's strengths, most mention having a school in the village (with the exception of Paco and Kekerre jejo) and five of the respondents relate that that they are happy to see their children be able to read and write (Jiwa, Kuruja, Paco, Padá and Sigua). Paco emphasizes his conviction that that studying is the only hope for the future and Sasagara demonstrates the belief that education will benefit his community when he says: "I am happy because I see that the children have to opportunity to be better, to not be like me who knows nothing. I see that the young people have the opportunity to study, to go forward and to improve and maybe improve the village". With the same vision of evolution, Uruta says "I think that it's great that youth can study because it gives them the opportunity become professionals and help our community. And there is a change in the way we dress now that we study. Our culture and traditions are changing".

However, it is precisely this type of repercussion that positions the current education system as a double edged sword. When asked about what has 'changed' since young people began attending school, the majority of respondents evoked various undesirable side effects. For

example, Piquigua says that it brings her happiness to know that her children "will not be like [her], will be able to read and write and will have a better future". Yet she says, at the same time "it also makes [her] feel bad "because the children go to school, all the traditions are getting lost and they don't know anything about the Emberá culture or the old way of life".

Kuruja sees a relationship between education and assimilation: "We don't live like we did because the children have to go to school. Now they don't want to wear our cloths. We are loosing our traditions and it's as if we are starting to look at how to be another culture". Nunu explains the origin of this phenomena: "Firstly, it's the place where they teach them. They teach them things about a culture that is not ours. That where the problem starts. During Midala's interview, he also refers to the culturally irrelevant content which teaches young people about Christmas and Patriots day[9].

5.2.2.2. Tradition

All of the respondents, with the exception of Eva[10] and Padá, explain with varying degrees of regret that traditional practices are disappearing and no longer hold the same value in their society. Uruta observes a generalized lack of care for culture and Sasagara matter-of-factly states that "culture dies here in the community!". As for Sigua, the medicine woman, she reveals that the only the neighbouring *Colonos* and the Kuna come to her for her help and that most Emberá do not. She says that most Emberá no longer believe in traditional medicine and that they want to go to the medical clinic. Sigua, Kuruja and Kekerre jejo mention their deception of the fact that most do not participate in the village dances anymore. With the sound of defeat in his voice, Kekerre jejo admits that he feels sad because everything has changed so radically:

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[9] During the time of data collection, the school teachers in the village were preparing the children for Patriot day celebrations. This included a two week daily rehearsal of a full brass band rendition of the national anthem which could be heard in the four corners of the village. For the older kids, it even involved the rental of white uniforms...

[10] Eva's only reference to culture in her interview is when she mentions that she no longer has time to "do all those things".

> The way we live is different. Before we used to play games and dance. But no longer [...] The Emberá didn't used to wear pants. The women used to wear *parumas* and the men used to wear *taparos*...Everything has changed and nothing is the same.

Jiwa and Nunu place emphasis on the parental role in the transmission of cultural knowledge. Jiwa says that because children are "becoming more civilized and are forgetting tradition and culture" it's important that the parents "make an effort not to loose what [they] were given when [they] were little and to leave something behind because now [they] are old". Sigua is sad because she sees that young people are ashamed of their culture and she feels that education and culture are of equal importance and hopes that the two are not mutually exclusive.

Eva, Chape and Paco's comments on tradition differ from the others because they seem to accept the loss of culture as part of the normal evolution process. Eva "no longer has time for that stuff" and Chape feels that his cultural system is no longer pertinent. He claims that young people do not want the same things as he does and can not be forced to participate in traditional activities:

> They want to be well dressed and from there we will never be able to keep the tradition. Youth do not love tradition. Old people do, but not the youth. They want to wear ties, be well dressed. They don't want to walk around like us all painted. They are ashamed of the culture, not all but some. Some think that if they are painted in the traditional way, that it will hinder them.

Paco doesn't blame the young people for abandoning tradition because he says that he has as well. He says that he no longer paints his body with *jagua* because he has changed knowledge and the 'the Book' says it is bad. Like Chape, Paco also talks about the influence of capitalism:

> Kids today all want finer cloths. If a parent makes one dollar, the kids all say, daddy I want a watch or I want cloths that cost x-amount of dollars. They want to dress nicer so everyone to look at them as if they were better, because they want to change. And if the parents have it, they go and buy finer cloths. And they all have their socks. And I? Well my feet are a little dirty because I still do not have shoes. Since I was young, I have lived bare foot and I like walk bare foot. But the kids, they don't want to get dirty, that's the change in kids these days. (Laughter)

5.2.2.3. Language

Since children began attending school, respondents feel that there has been an important decline in the use and transmission of the Emberá language. Although youth are able to understand the Emberá language to varying degrees, many are not able to speak the language. Some respondents express great regret and concern about the situation (Piquigua, Paco, Padá, Nunu, Sasagara, Midala and Kekerre jejo) and in fact, Piquigua and Paco sadly report that their children do not speak Emberá and that it creates an important barrier between them and their children. Recognizing the advantage of speaking Spanish, Paco says that he only wishes his children could speak both. He complains that the youth today are "learning as if they weren't Emberá. The teachers are teaching them as if they were Latinos. They are not learning anything about being Emberá [...] What can we do now that we are antiquity?" Nunu says that he insisted that his children learn his language but that in general now that children "spend so much time in school, all day speaking Spanish, they loose interest and love for the language. It doesn't matter to them anymore". Midala also worries that the young people can not speak his language and feels that they are being assimilated into Latino and American culture. He contemptuously states: "we are leaving behind our customs and traditions. We are becoming Latinos. Young people are taught about the discovery of the Americas, but we were not discovered, we were here and our people were massacred!"

Sasagara reflection on the subject highlights the correlation between language and culture:

> Young people say, 'Oh I am a student, why do I have to pay attention to speaking Emberá, better that I speak some Latino language'. They don't want to speak Emberá, so that is the end of the Emberá [...] But look at the Kuna, they have university studies, are lawyers, teacher, everything, but they stay Kuna! They never leave their language or their tradition. But us? We are lost or we are [in the process of] loosing.

5.2.2.4. Occupation

With regards to the Emberá's occupational activities, eight of the thirteen respondents mention their people no longer work as they did before. It is interesting to clarify that when the respondents make this affirmation, they are specifically associating 'work' to cultivating the land and not other occupations such as working in the teckales or as day labor. Piquigua

shares: "People don't work anymore. I don't know why. Before everybody worked, now it's only a few". She admits that even she does not work the land as much any more: "Before I could work as much as I wanted to, but now I have to be here and worry about the children in school. Before when I lived in the Darién, I tilled the earth and everything. I have worked since I was little, planting maize, plantains, rice". Jiwa also says that she enjoyed working the land when she was younger and questions the recent changes:

> Now we have an office, a tourist shop and a cultural house. I suppose those are improvement that I see. But the way of living has changed so much, now my children live without working. They don't worry about making money; they just walk around like that living off their parent's money.

Midala says that planting is part of their tradition and that 20 years ago, nobody raised livestock. He explains that now that children are educated and families need money to send there children to school everyone's vision has changed. Paco and Sigua speak of the change in the women's availability to work the land because of the time they consecrate to weaving of baskets that are sold to tourists. This basket weaving technique is not originally part of the Emberá tradition and was taught to them by the Wounan[11] some 20 or 30 years ago. The fact that his wife weaves baskets all day irritates Paco and Sigua says that she has no choice but to weave and sell all the time because she need the money to send her children to school. Kuruja feels the change in occupation has made her people lazy "because they have to worry about making money. Now all women do is weave baskets. We are no longer dedicated to making all our traditional foods. Weaving baskets makes us lazy. Nobody wants to mill corn anymore to make chicha".

Chape is the only interviewee that mentions that he feels as though their occupational activities have improved: "We are more productive, we plant more with the machines. Life is

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11 The Wounan and the *Emberá* share the same Colombian roots, but have completely different languages.

better now, because now we have a health center and a highway where we can get on a fast bus...and there is school. Everything is much better now".

5.2.3. Political Relations

In the late 1960's, the Panamanian government imposed the Kuna model of organization on the Emberá populations. However, in a World Bank study of Indigenous groups in Panama, Vakis and Lindert (2000) report that although this system of establishing official local authorities was ratified in 1983, the implementation has not been very successful and that amongst the three main indigenous groups in the country, the Emberá remain the least formally organized. The authors also suggest that this is due to the Emberá's traditional migratory settlement patterns where they tend to live in dispersed, family based clans in semi-nomadic conditions. This description of the Emberá (which is less than ten years old) most definitely describes the lifestyle of Emberá interviewed in this research before the formation of their village. However, since the inhabitants of Ipetí were forced to settle and live within the boundaries of the Tierra Colectiva in the 1970's, they are no longer able to live according to the World Bank researchers' description.

The data reveals that the conditions under which the village of Ipetí was formed has caused a great deal of mistrust and frustration towards the Panamanian government. In addition to these dissatisfactions, the participant observation and the individual interviews also reveal significant political tension at the local village level. The themes identified to organize the data presentation under the political relations subcategory are national government, land rights and local government.

5.2.3.1. National Government

Although none of the interview questions directly addressed governmental or political relations, a few respondents mention the unsatisfactory relations with the Panamanian government. Evoking memories from the past, Eva describes how she felt neglected by the government who forced her family to relocate to Ipetí because of the flooding of the area she lived in for the construction of the hydroelectric dam:

> Oh, it took so long to get here. I didn't think we would make it and when we got here, there was nothing. We went to sleep on the little hill over there, in the rain. We were so worried that we had to make the house so quickly. And the government didn't help us at all. It's with our own means that we had to start our life here. We had to pay for everything. There has not been one single year that the government helped us.

Midala regrets that his people who once were able to migrate within the tropical forest region are now confined to cultivating within the geographic limits of a territory he considers far too small. As for Nunu, he believes that his people have not received adequate compensation and without support from the government, because of their indigenous reality, his community will continue living in poverty.

5.2.3.2. Land Rights

Several respondents identify the absence of legal title to the land as one of the community's top three problems (Eva, Jiwa, Chape, Kuruja, Nunu, Midala, and Kekerre jejo). Kekerre jejo is bitter that after 30 years, his people still do not have legal ownership of the land whilst Midala feels that this lack of recognition places his community in danger. He says that he worries because "when they moved us because of the Hydro electric dam, we signed an agreement on the 5th of February that said the government would give us our Tierra Colectiva. But it has been so many years and yet nothing has happened. Isn't that strange?"

Chape claims that his biggest preoccupation is to have a legal ownership of the land he lives and works on:

> We don't have any safety with regards to the land. I am referring to the land title. It's very important to have the legal title to the property we are working on. Because right now, people with money say "I want this land" and take it away from us and that it...we lose everything we have worked for. If we had our legal ownership, it would not happen like that. We don't have title to the land because it's some plan against us. There needs to be reform and we have to go into court.

Nunu also emphasizes the importance of having a law to protect their land rights against the invasion of the Colonos. He says that when it has happened in the past, his people make complaints and "they (the government) always says yes, yes, we are looking into it, but that is

just pure stories". He continues to explain having land rights are part of his indigenous identity:

> We must all arrive at an understanding that we must fight for the land, not to abandon it, not to sell it, but to work it. That is the only way for us, indigenous people, to stay alive. If we don't have land, if tomorrow we sell it to strangers, were will we go? How will we get through things with our families? For me the land is very important.

5.2.3.3. Local Government

The previously mentioned question regarding the village's top three problems also identifies the community leadership in place at the time of data collection as an important concern for some respondents (Eva, Jiwa, Sasagara and Kekerre jejo). Furthermore, while responding to the various other interview questions, several interviewees elaborate upon their frustrations concerning the villages' local authorities (Jiwa, Chape, Padà, Nunu, Sasagara, Sigua and Kekerre jejo).

While explaining the division in the community cited in the social relation subcategory, Nunu explains what he believes to be the origin of the problem:

> The division comes for various reasons. Firstly the division was born from the leaders, the head leaders. There were some leaders, who in the name of the group acted for their own interest and that and it is why there is division. It has been like this for the past eight years. There have been many Caciques in the last years.

Several also mention that they feel the Cacique is ineffective, lacks the power of authority and is disorganized. For example, Padá and Sasagara consider that village meetings are far too irregular and are rarely productive. The most prominent complaint is that some feel that the Cacique does not work in the interest of the entire village but rather to benefit her own family ties (Eva, Jiwa, Sasagara, Sigua, Kekerre jejo). Most interviews demonstrate the general lack of cohesion in the community and can be exemplified for example by Sasagara comments regarding the CDM Project: "the junto directivo and the Cacique want to work separately on their side, they want to walk alone and do this project alone. Now that's what I call a problem".

5.4. The Self Sphere

The final emerging category identified in the interview data refers to the inner most sphere of the proposed livelihood regeneration paradigm which is the sphere of the "Self". Unlike the Nature or Social spheres, the Self is not broken down into subcategories simply because this research does not contend to provide a thorough psychological analysis of the individuals interviewed. However, since it is the sum of individuals which constitutes a society and the interview data reveals significant personal information regarding the respondents internal reality, it seem relevant to pose, at the very least, a minimal reflection on this type of information when considering the implementation of a project which aims to provide a "sustainable development". For example, according to social work research, a project that aims at providing positive social impacts should aim at developing participants self esteem (Racine and Leroux, 2006). In the case of this research, self esteem is considered as the view and the value an individual attributes to his or herself. Empowerment is also an important indicator of the social success of a project and is considered as a process which fosters the appropriation of power which enables individuals to take action on the decisions they make in an autonomous fashion (Ninacs, 2001). Finally, we esteem that it is the combination of an individuals self esteem and feelings of power one has in his-her life that contributes to his/her capacity to actualize one's self. Thus the three specific themes identified in the interview transcripts are self esteem, degree of empowerment and self actualization

5.4.1.1. Self Esteem

It is disturbing to note that amidst the recent and intense changes, several of the respondents seem to have acquired a poor perception of themselves and of their indigenous identity. Although Piquigua, Padá, Sasagara and Uruta claim to have preferred their previous semi-nomadic lifestyles, all say that they are happy that the children now study because this will prevent the younger generation "from being like them" (Padá). It is as if theses respondents consider that in today's day and age, formal education is of greater value than any traditional knowledge they may have acquired throughout their lives. Sasagara for example says: "I am happy because I see that the children have the opportunity to be better and not to be like me who knows nothing". In the same sense, Paco says that although he is proud of his language

and insists on continuing to speak it he dismally asks "what can we do if we are all just antiquities?" As for Midala, the only respondent who has received a formal education, studying seems to have been beneficial for his self esteem because he well versed on the rights and demands of his people, expresses himself with ease and says that "studying is great because it gives us an opportunity to become professionals and help our community".

5.4.1.2. Degree of Empowerment

During their interviews, many respondents demonstrate a certain sense of powerlessness over their lives (Eva, Piquigua, Jiwa, Paco, Nunu, Sasagara, Sigua and Kekerre jejo). Eva and Nunu both wish *someone* would come and help them so they could have a better life and Piquigua repeats several times that she goes to church to ask for God's help because "he is the only one who knows what will happen". When asked what the community needs to resolve their problems, Jiwa earnestly questions how her people are supposed to improve "if there is nothing for us?" whilst Paco matter-of-factly responds: "What are we going do? (Laughter) There is no law, and we can't resolve anything". Sasagara says "we are lost or in the process of loosing" and Kekerre jejo simply states that he has no hope.

Although Sigua and Nunu both share that they are very constantly preoccupied by making ends meet, they are the only respondents who seem to express a certain power over their lives because of their limited, but none the less, capacity to be self sufficient in responding to their needs. This self sufficiency is demonstrated for example when Sigua says "I don't like to spend my money at the store. I raise my own chicken and that is why I like living out here. I only have to buy oil at the store. I like to plant plantains and I enjoy harvesting".

5.4.1.3. Self Actualization

Keeping in mind the Emberá connotation of work, which seems to be equated with working the land and not necessarily the work completed for employers, the vast majority of the respondents feel that their people's work ethic has degraded. Sigua, for example, says: "I can see that now the Emberá don't like to work hard like they used to. I don't know why but they have become lazy". Eva admits that she feels lazy and Jiwa complains that her husband no longer dedicates himself to working. With introspection she says "I don't know what

happened to us. Before, we used to plant rice and maize, but now not. Those are the things that worry me. Why don't we work like we used to?"

Without shame, Paco explains that he no longer works as much as he used to and says: "Why should I plant? When the earth no longer is worth anything, why would anyone go out there to work? When you work, you don't get anything. That is why we no longer work, because it is useless". When asked if there have been any changes to the way her family eats over the past five years, Kuruja also reports the erosion of laziness:

> We don't even make chicha anymore, we just drink oatmeal or coffee. We've become too lazy to make chicha so we don't drink it anymore. (People have become lazy) because they have to worry about making money. Now all woman do is weave baskets. We are no longer dedicated to making all our traditional foods. Weaving baskets makes us lazy. Nobody wants to mill corn anymore to make chicha.

Padà hypothesizes on other reasons for this "laziness": "Now that we live in a village, people work less. Because everyone wants money. I guess people don't work because they see tourists who give them money". Nunu is saddened to see this change in his people and affirms that "some have stopped taking care. They don't think of working or leaving something to their kids, or of ways to make the village better, they just run after money".

5.5. Representational Elements of the Carbon Project

Since the carbon project was only in the preparatory stages, it is difficult to evaluate a concrete appreciation or impacts of the projects implementation. As previously mentioned, the community of Ipetí has contributed to various aspects of the CDM project proposal which is guided by researchers at McGill University for over four years. Various community members have participated in assessing the carbon mitigation potential of the area, discussions on how to spend the money generated from the sale of carbon credits. However, from the interview data, the project does not appear to be unanimously well understood or desired.

When asked to share their opinion on the carbon project, most respondents reveal that they do not really understand what it consists of (Eva, Piquigau, Jiwa, Paco, Padá, Nunu, Sasagara, Uruta and Sigua). Midala is the only individual to refrain from commenting because he says that he does not possess sufficient information to form an opinion, partially because he is often away in Panama City and has not been able to assist the village meetings on the subject. Piguigua and Paco identify that part of the comprehension problem for themselves and surely for others, resides in the fact that carbon project meetings are held in Spanish and that many adults don't always understand because it is their second language and they are more comfortable speaking in Emberá.

Without expanding on the idea, Kuruja, Jiwa and Piquigua mention that the carbon project could be interesting because it would contribute to the reforestation of the area. Five of the respondents claim to see the merits of such a project because it would "bring lots of assistance" (Eva, Piquigua, Padá, Uruta, Sigua) and more specifically that it would generate the money needed to pay for the construction of new houses and pay for the children's education (Eva, Piquigua, Paco, Nunu and Uruta). This idea is surely emerges from a film several respondents refer to, which project promoters showed during one of the community meetings. Paco relates having been inspired by this film because it was about a poor man who once lived in a deteriorating house and "the man said that because of carbon there was a change. And now he has money. Now everything has changed for his family and they have a better house. Anyways, that is what I saw in the movie and maybe it can happen to me too! "

Although some respondents claim to welcome the carbon project, considerable frustration and doubt is also expressed. Jiwa, Nunu, Sasagara, Sigua do not understand why the project has not commenced and report no longer believing in it because after two years of discussion, they have not witness any tangible results. Nunu, Sasagara and Kekerre jejo also express lack of conviction regarding the projects realism because of its complexity and the heavy administrative requirements, which reminds them of the struggle receive the title to their land. They question that if after 30 years of fighting, they are not able to win legal title to the land that is rightfully theirs, how can they benefit from such a complicated project.

Jiwa, Sasagara, Kekerre jejo say that they don't trust the village leaders to manage such a project in a fair and equitable way and even allude to past stories of corruption regarding research money. Jiwa and Sasagara don't believe that such a project can really exist. The latter says:

> "If you ask me about what I have seen over the past 50 years, I haven't even heard of this type of project, I don't even know what it is. I have never received any benefits from something like this. So when they ask me 'oh what about the project', all I can say is that I only know about, is the project of my land because I have worked on it with my own sweat and my two hands. I can [believe in what] I do with my own two hands. That is my project! When someone says to me "oh the project, the project", I don't know, I don't know anything about it. But nobody should say I am bad because of that. If the project wants to come, let it come. I want to see it. And if the project is good and improves our lives, great even better! But I have never lived from this type of thing and I haven't even seen it either. If no one even understands the project, how can support it?

Although it is unclear if all the respondents understand that the payment for the majority of the carbon credits (*CER's)* is generally made at the end of a of a 7 or 10 year 'crediting period', Kukuja, Paco, Sasagara and Kekerre jejo seem to and comment on this unrealistic delay in receiving return for their investment. Each of these respondents articulates something similar to "we are hungry now, not in 15 years". Kuruja and Kekerre jejo mention fears related to their food sovereignty if the carbon project comes into effect. Kuruja says that she doesn't understand much about the project apart from the fact that that the money "will arrive in 20 years". She continues to say: "We already live like slaves. So now what? We have to sit here and wait to leave something to our children? My children will say 'my mother did all this and now I can't plant my plantains or my yucca'. And there won't be enough money, so they too will be slaves". Kuruja is concerned her people will only be 'peons' working to plant seedlings and that they will be paid to plant trees on their land instead of working to cultivate their food. She adds "they can give me a two story house but I still need to work to eat".

Chape and Padá attitudes towards the carbon project stand out from the rest of the respondent's. Chape is very motivated for he sees this as multiplying his investment since he

intends to continue cultivating his mechanized rice fields. He reveals that he has even set a piece of his land for when the project is ready to begin. Padá's however seems almost nonchalant about it. She says that the project seems fine to her and says that she imagines that she will have to work on the project yet does not expect that there will be any personal gain in it for her.

5.6. Cognitive Word Associations

The final question of the interview guide invited the respondents to make cognitive word associations, an exercise which is often used in the study of social representations. This activity proved to be rather challenging for the respondents and required considerable encouragement from interviewers in order for the respondents to complete the exercise. The five word inductors were forest, different-change, desire, future and carbon. The lack of the respondents Spanish language skills was a likely an obstacle for them and most respondents explained ideas with several words or sentences. Table 5.4. provides a résumé of the respondent's associations to the word inductors.

Considering the ethnographic nature of this research, it may be surprising to find such a summative table be used to convey the results of the data collected. The presentation of the word association results in a straightforward table form is not meant to purge the data of its meaning or nor to simplify it, but rather clearly illustrate responses that may provide additional texture to the rest of the data presented according to the sustainable livelihood regeneration framework.

It can be noted that answers reflect much of the realities portrayed in the responses of the other interview questions: a preoccupation with working the land, the precarious living and environmental conditions and the hope for improvement. The forest seems to be primarily associated with a positive image related to their traditional way of life. The forest is where

Table 5.4: Cognitive Word Associations

Respondent	Forest	Different-Change	Desire	Future	Carbon
1♀	- to work - to have something	UNABLE TO ANSWER	- to rest - to have food - having electricity	- to sell - to have something to eat - children	- hope for the children - having a house - will it come?
2♀	- planting - clear the land - cut big trees	- worried - way of thinking - how to work	- something for the kids - to have money - food and a house	- professionals - better life - a sacrifice now for the children	- planting trees - stop cutting trees
3♀	- animals - working - reforesting	- no improvement - the river is rising - changing environment	- food - many desires	- suffering - working hard for food - help for old people	- planting tree - future generation - no benefit for her
4♂	- to work - to sow - to harvest	- to improve	- something good - to buy a car - a good farm	- that it will be good - to fulfill desires - to have a good house	- to become reality - is it legitimate - to have confidence
5♀	- animals - wagara - wood producing trees	- having a car - to have a good house - children finishing school	- to have pigs - to have cows - to have light	- a change - more money - happiness	- lots of trees - a work method
6♂	- mountain - earth - tree	- to be happy and calm - not to work too much - everything in the village	- working - money	- change - way of life - death of tradition	- something I want - researchers know - maybe I can too
7♀	- land - river	- thinking - to improve	-to live well - to work - to have money	- *doesn't understand* - to be someone - to study	- assistance
8♂	- sacred - protection - without forest desert	- to improve - to get worse - change in way of living	- to have something - to learn - to gain	-the future of the Emberá is poor - Education	- beneficial if project succeeds - students becoming teachers & engineers

Respondent	Forest	Different-Change	Desire	Future	Carbon
9♂	- tigers - work - food	- weaving - no use for traditional objects	- to purchase	- new - title to my - to receive assistance	- doesn't understand - doubt in the success - personal or collective benefits?
10♀	ERROR	- carrying water from the river - looking for fire wood - to wash	- UNABLE TO ANSWER	- to raise animals - buying school supplies - my son continuing his education	- assistance - money - sending children to school
11♂	- cultivate - Nature - trees	- economic -cultural - social	- academic - to be healthy - good harvest	- harmony - stronger organization - to think ahead	- need to better understand - further develop the project
12♀	- to work - to prepare food - to think	- eating - unable to improve - what to do?	- think - live well	- to work - to raise children - to support the family	- to live well - to get assistance - if not, what?
13♂	- to live - maize	UNABLE TO ANSWER	- a good house - to live quietly - a good life	- uncertain - time to plant - summer is coming	- waiting - doesn't know if it's good or bad - will it materialize?

all life forms are found and sustained, the place of self actualization and for collecting the elements needed for survival. With regards to the associations for development, which was broken down into the inductors different (change), desire and future, the responses reveal a certain instability or dissatisfaction in the respondents' current lifestyle. The idea seems to be associated with a possibility of happiness, but almost as if it was an ideal yet to be reached and inexistent at the moment. Associations seem to reveal a desperate desire to achieve that which others in the outside world seemed to have gained. When examining the word associations produced for the inductor of carbon, a certain insecurity may once again be detected. It is evident that many do not clearly understand what exactly carbon is and

whether it is legitimate or not, but many hold on to the concept with hope that the sacrifice and long term investment maybe beneficial for the future generation.

The results presented within the livelihood regeneration paradigm, as well as in specific relation to the carbon project and as part of the word association provide information regarding the respondents' social representations of the forest, development and the CDM project. The dominant image portrayed throughout the interviews depicts a state of important, and somewhat difficult, cultural change that seems to have begun on the onset of the 'development' in the region in which they live. Unfortunately, the results leave the impression that this development has not, as of yet, provided substantial benefits for the Ipeti-Emberá but rather has contributed to a certain social and cultural degradation. In the following chapter, these results will be summarized and presented as schematizations which characterize elements of the respondent's social representations. These characterizations will help clarify the respondents' rapport with the CDM project and it's relevance in the indigenous community's universe.

CHAPTER VI

DISCUSSION

As we recall, this research was concerned with the following question: What rapport do the Ipeti-Emberá, as a poor and marginalized indigenous group, have with the reforestation CDM project being elaborated in their community? Although the research results presented in the previous chapter provide the general information needed to respond to that question, these results were subjected to a deeper and second level of analysis in order to identify specific elements the Ipetí-Emberá's social representations. This second analysis resulted in the schematization of the respondents' social representations of the CDM building blocks (forest, development and the project) in the form of cognitive maps. The explanation of each of the schemas is linked with the specific themes of the emerging categories from the initial research results.

The cognitive maps will open up the discussion on the relevance of reforestation CDM projects for Ipetí and other similar communities. Using the critical social components of this research's theoretical framework, the compatibility of the scientific technological world vision which conceived the market mechanism will be explored in relation to the indigenous world vision. The discussion will also contextualize the current cultural invasion being experienced by Indigenous People and local communities in the era of market mechanisms and endlessly multiplying strategies for sustainable development.

6.1. Characterizations of Elements of the Respondent's Social Representations

In this section, certain elements of the respondent's social representations of the *forest*, *development* and *carbon project* will be clarified in order to attempt to clarify aspects of Ipetí-Emberá's reality and vision of the world. The strategy employed to characterize these elements is illustrated in Table 6.1. and was based on identifying which initial results

revealed aspects of these representations in a) the responses to the specific questions according to the interview guide, b) the emerging themes from the data analysis and c) the word association for each inductor object. In each characterization section, the corresponding themes from the emerging data analysis categories are indicated in parentheses and italic and each section also includes the cognitive map of elements of the social representations held by the Ipeti-Emberá. It is important however, to mention that these representations are not presented as ultimate truth claims, but rather as the researchers', *an individual with different cultural references than the Emberá,* interpretation of the respondents' representations.

Table 6.1: Strategy for Characterizing Elements of Social Representations Based on Interview Guide

Forest	**Development**	**Carbon Project**
Images and feelings evoked by the forest **QUESTION # 1**	Community strengths and weakness **QUESTION # 10 and #11**	Representations of the carbon project **QUESTION # 15**
Synthesis of subcategories of the *Nature* sphere of the Regeneration Paradigm **QUESTIONS # 2-9 and #12-14**	Synthesis of the 7 subcategories of the Regeneration Paradigm **QUESTIONS # 2-9 and #12-14**	
Synthesis of word associations for inductor: *forest* **QUESTION # 16**	Synthesis of word associations for inductors: *change, desire and future* **QUESTION # 16**	Synthesis of word associations for inductor: *carbon* **QUESTION # 16**

6.1.1. Forest

As indicated in Table 6.1, aspects of a representation of the *Monte* can be found in responses to various questions. The research results from the previous chapter and schematized in Diagram 6.1. illustrate conceptions of the forest which reach beyond attributing value to the forests for its individual components and which extend towards a vision of a complex and

sacred place (*physical surrounding*) which has the power to sustain life for all beings. It is as much the home of a wide range of plant and animal diversity (*faunal and floral assemblage)* as it is the place of the Emberá. Their people's history, survival and traditions are based on living within the forest system. It is perceived as the ideal place to live for they are a forest dwelling people who feel more at ease in the depths of the jungle than in the imposing organizational structures of a village. The Monte is synonymous with peace and freedom where obligation does not surpass supporting the livelihood of the family clan. Traditionally, the forest was the place of survival because it provided the raw materials needed to build houses and food from the wild animals (*food supply*) and fertile soil for cultivating. Agricultural cultivation was and still is considered as their occupation, part of their identity and part of their purpose in life. The respondents tell the story of their youth where they were once free to live a semi-nomadic life, to cultivate the land for a limited period and than to move on leaving behind fallows which would soon regenerate a mist the fast growing tropical jungle.

However, since the 1970's, the forest has become a place with which their relationship is changing not only because of their newly sedentary lifestyle but because slowly but surely the forest is a place that is being destroyed. Respondents still claim to maintain a close multipurpose relationship with the *Monte* but do not see themselves as factors contributing to deforestation but rather as the people directly experiencing the impacts of deforestation (*ecosystem integrity*), the subsequent temperature increase (*meteorological and climatic conditions*) and the soil's erosion and loss of fertility (*regenerative capacity*). Perceptions of the forest are associated with strong feelings of distress. As the trees are cut down, the once abundant and divers plants and animals which supported their life style (*value*) are also disappearing (*presence*). Respondents report that their agricultural endeavours are increasingly yielding poor results (*sufficiency of access*) and are becoming unreliable because of lack of technique to deal with newly emerging obstacles such as infestation, reoccurring drought and soil erosion (*security of access*). Since working in the Monte no longer produces enough food, some members of the respondents' families have abandoned agricultural cultivation and have become idle. Others have begun working as day labourers in order to

generate the income needed to buy food (*mode of access*) and thus do not have the time to take care or cultivate their land. In addition to this changing rapport with the *Monte*, many report that their children do not share their love nor their interest for the land, which is causing them to begin questioning the pertinence of their Emberá culture in the modern world. The 'health' of the Monte appears to be represented as a reflection of the 'health' of their culture.

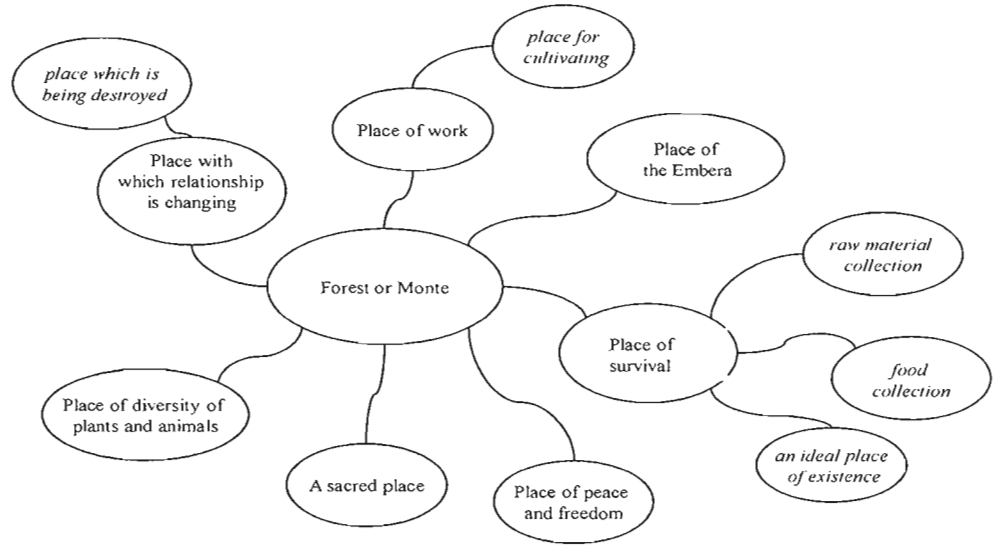

Diagram 6.1 Map of Social Representations of the Forest[12]

6.1.2. Development

As previously mentioned, respondents did not seem to identify well with the concept of development so it was equally approached in terms of change, desire and future. For this reason, the characterization of the elements of the development social representation

[12] This schematization style is inspired by Saint-Arnaud (2007) and her work on Anicinapek Representations of the Forest.

presented in Diagram 6.2. is larger in scope compared to those of the forest or of the carbon project.

The first element of noteworthy interest is that the respondents seem to conceive development as something difficult for their people to achieve or as being associated to past unsatisfactory community project experiences. This does not however signify that they have abandoned hope because development seems to be equated with finding the means to improve. It is associated with making sacrifices so youth may complete their studies and access professional employment positions (*education*), as well as with capacity building for themselves and other community members (*self esteem, self actualization*). Respondents represent development as something that depends on strong community leadership (*local government*) and gaining legal title to their land (*national government and land rights, feeling of power*).

The data reveals the respondents impressions of their society that has regressed in several aspects and they associate development with being able to re-establish food security and even a certain degree of food sovereignty. For them development represents acquiring new agricultural knowledge for the changing agricultural conditions in order to harvest bountiful crops *(occupation, self actualization, mode of access, sufficiency of access and security of access, regenerative capacity*). The respondents also recognize that cultivating the land is not enough and that the forest can no longer provide what is needed to survive in terms of food and shelter (*ecosystem integrity, value, presence*), thus development is seen as finding the means to access the financial resources needed to rebuild houses, to assure water supplies and to finally have electricity.

One of the ways the Emberá envision to generate financial resources needed for their improvement and survival is through eco-cultural tourism, through earning money from that which they know (*economic interactions*). This is an interesting juxtaposition because at the same time development is also expressed as representing different way of life, which has no use for tradition and which leads to the loss of culture (*language, tradition*). The final aspects of the development representations are the associations of well being which are

describe as being able to live in solidarity *(family interactions, community interactions, local government*), in health, with peace of mind quality of life that does not include constantly worrying about survival.

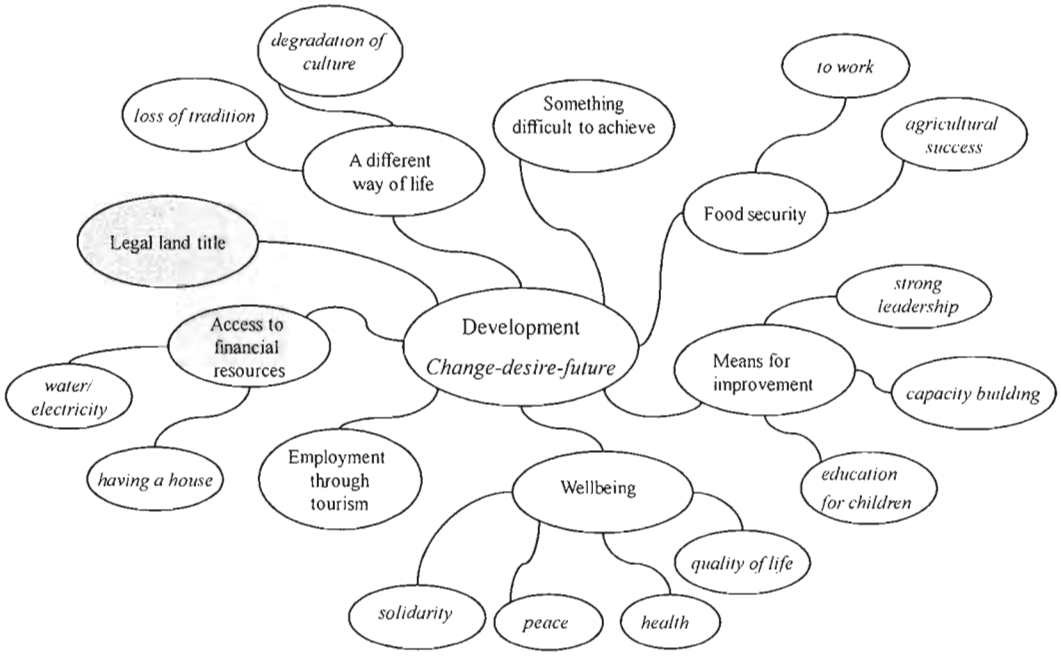

Diagram 6.2. Map of Social Representations of Development

6.1.3. Carbon Project

It is difficult to characterize the social representations respondents' hold of the carbon project since its CER generating activities were not yet in place at the time of research. However prevalent attitudes towards the project elaboration process can be distinguished and provide insight into the elements leading up to the construction of an eventual carbon project representation illustrated in Diagram 6.3. Of the greatest significance, is the unanimous lack of comprehension of what exactly carbon is. Although project promoters have given several workshops on the topic and a select few community member can repeat that 'carbon come from cars, pollutes the environment and can be taken out of the environment by trees', the fact remains that the concept of carbon storage is not part of the respondents' realm of

significance. It is something that is intangible in their concrete universe which focuses on survival, food production and struggles for obtaining legal title to the land. They perceive it as representing something foreign and exterior to their culture, carbon is something they have never experienced or even heard of before. Most respondents speak of the carbon project as something similar to the lottery, something that could generate large sums money to fund the younger generations' education ('so they can become engineers and teachers') and provide the financial resources needed feed their family and build new houses since the forest no longer provides as it once did. Since the projects focuses of reforesting pasture or fallowed land, it is also conceived as something that could rejuvenate and reinforce the forest. Some see the carbon project as representing a possibility and a hope for the future, something to leave behind to their children, while others conceive the carbon project as a much too long term investment for which they will not live long enough to benefit from and which may impact agricultural activities.

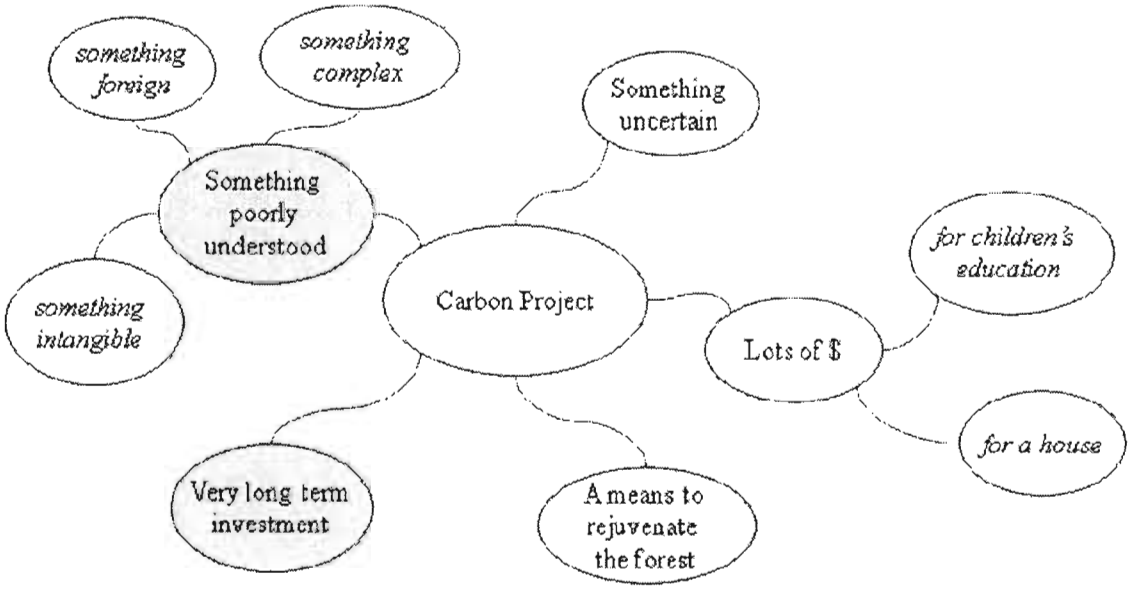

Diagram 6.3. Map of Social Representations of the Carbon Project

When comparing the results presented in the previous chapter in relation to the Nature, social and Self spheres and those of the word associations (which were the basis for the cognitive maps of the social representations), a double tension which expresses a social suffering brought on by development and the destruction of their land can be observed. The respondents' discourse regarding their local reality is in stark contrast with their representation development. Although they recognize that development has negatively impacted their land and their Emberá lifestyle, they seem to consent, although painfully for some, to their own cultural alienation in the quest for access to financial resources. Many resent the changes brought on by development yet at the same it appears as though they see an exogenous 'development project' such as the CDM, as a last hope, as something that will be able to save, if not themselves, than the future generation from the vulnerability of poverty and hunger. This contradiction explains the disproportion between the multiple positive representational elements (circles) and the few, yet considerable, negative elements illustrated in each of the cognitive maps.

6.2. World Views

As remarked by researchers affiliated with the smallholder carbon sequestration project in the Chiapas, macro level theories and strategies ultimately depend on how local communities respond to theses policies (Nelson et de Jong, 2003). In light of the results presented in the previous chapter, questions regarding the possibility of conciliating the local and the global, the North and the South, the modern scientific knowledge and local indigenous realities beg to be examined.

6.2.1. Modern Scientific Knowledge, the Kyoto Protocol, and Carbon Markets

In 1998, the Intergovernmental Panel on Climate Change was established as an international science policy advisory body on issues related to global warming. This effort to base policy on strong scientific foundations is often criticized as being a way for governments to reassert control over the development of climate change knowledge (Hass, 2004). Although there is a strong emphasis on peer reviewed materials, the IPCC suffers from the appearance of

government control because the governments not only vote on reports but also appoint researchers (Hass, 2004).

The dominant discourse based on scientific findings affirms that CDM's can not only contribute towards mitigating global climate change, but also claim to assure the sustainable management of forests, the protection of biodiversity and reduce poverty by providing opportunities for socio-economic development (IUCN, 2002). Expert-driven global environmental change institutes support the Kyoto techno-scientific world view by fuelling policy makers with research that establishes equivalences between industrial carbon emissions and the biological sequestration capacities of trees, that estimates theoretical calculations of carbon stocks over ten year periods as well as that establish worst-case *baseline scenarios* of the inconceivable amounts of pollution that would be generated if somebody does not safeguard developing countries by investing in win-win carbon sequestering projects (Lohmann, 2005). This world vision privileges a technological approach to avoiding the impacts of environmental degradation, rather than adopting behavioural modifications (Bäckstrand and Lövbrand, 2006). It is also based on a value-laden theory that considers that inflicted harm can be attenuated by other good deeds, that excessive pollution in the North can be compensated for by financing 'good' activities for the poor somewhere else in the world (Padilla, 2004).

These orientations make no connections between environmental degradation and the aspiration for constant economic growth. Instead, the climate change policy is founded on the postulate that environmental goods are better managed and more efficiently used if they are attributed a market value (Bäckstrand and Lövbrand, 2006). Trees, pollution rights and carbon credits become standardized commodities on an international exchange market that is considered the ultimate tool for cost-effective environmental protection and poverty alleviation in 'developing countries' across the globe. The techno-scientific discourse simplifies nature and constructs empty spaces by disregarding local people's traditional land uses and assuming that the land is ideal for establishing carbon sequestering tree plantations (Fogel, 2004).

The business generated by the Kyoto Protocol, interestingly enough, not only provides opportunities for development to the poor but also for institutions such as the World Bank, consultancies, trading firms, investment banks, commodity exchanges, national laboratories, research establishments, industry associations, law firms, policy think-tanks, industrial standard setting bodies, non-governmental organizations and universities (Lohmann, 2005).

6.2.2. The Ipeti-Emberá Cosmovision and the Indigenous Experience of the World

The case study of the Ipeti-Emberá reveals a radically different view of the world than that which is held by global policy makers. As illustrated in the cognitive social representation maps, the Emberá's universe is based on an intimate relation with the land. This vision resonates with the various statements made by International Indigenous People's at COP negotiations which emphasized a posture of gratitude and respect for the sacredness of the Earth (IFIPLCCC, 2001). Without completely romanticizing aboriginal people, traditional societies like the Emberá, tend to be based on subsistence economies.

Up until the thirty years ago, the Emberá lifestyle depended on moving around the forest ecosystem and employing survival strategies based on traditional ecological knowledge (TEK). The Emberá's shifting agriculture reflects one of the primary principals of TEK: the rotation of exploited areas. TEK is characterized not only by a complex system of knowledge of the surrounding world based on experience, but also on a system of belief and an ethic of non-dominance (Berkes, 1999). The Emberá's traditional belief system incorporated and attributed value to cultural activities such as songs, dance, ceremony and spirituality in daily life.

Fogel (2004) argues that the UNFCCC forest definition ignores indigenous characteristics such as those related to biological diversity, quality and history of human use and as representing forest dwelling communities' sources of cultural diversity. These forest characteristics are reflected in the Emberá's traditional lifestyle, history and culture, all of which are tied to a world vision that places them in a symbiotic and egalitarian relationship with the Monte. Trees are sacred because they provide medicine, food and shelter, but also

because they part of the equilibrium of the universe. Indigenous identities are based on their belonging to an ecosystem which full of life and spirit, see themselves as coexisting with other beings. (Berkes, 1999)

However, since the onset of development in the Bayano region and the degradation of environmental conditions, the Emberá are beginning to feel that their traditional knowledge is becoming obsolete especially since it no longer enables them to feed their children. Like most traditional communities across the globe, contact with the developing world has begun transforming their belief systems. Traditions and language, fundamental elements of culture, are being left behind in order to focus on cash generating activities. They are experiencing the power imbalance between world views like the numerous other local and indigenous communities across the globe who have suffered from exploitation, decreased wellbeing or violence at the hands of 'global' development initiatives involved in the extraction of oil, coal, timber or other commodities for global markets (Fogel, 2004). In the Ipetí-Emberá's world view, development does not appear to be based on the accumulation of material wealth or 'leapfrogging to cleaner technologies' (UNDP, 2004) but rather is equated with regeneration, with discovering the means to re-establish a wellbeing, to continue working the land, to having a descent home, enough food and mostly to be able to offer their children a secure and stable future.

Concerned for survival on a day-to-day basis but also for the wellbeing the next generation, the Emberá are conscious that old ways of doing no longer suffice and that they need to find new ways to stay alive. Their Indigenous world view includes traditional knowledge which teaches them that survival comes from the land. The carbon project offers new possibilities for livelihoods base on the forest, but seems to be difficult to integrate into their vision of the world. This is not surprising since environmental strategies, as in the case of the Ipetí project, are often negotiated in the language and the mindset of the dominant culture, and thus are founded on culturally inappropriate concepts and procedures (Stevenson, 1998). This has caused many indigenous communities across the globe to complain of land management

strategies which affect the meanings and values that guide their everyday lives (Stevenson, 1998).

6.3. Viability of the CDM: Is the Horse Sick or is it Dead?

As illustrated in Table 1.1., there are still many unresolved issues around CDM regulations and which are receiving growing criticism from international civil society actors. Yet, the UNFCCC negotiations continue to insist that carbon mitigation strategies comply not only with international policies but also be cost-effective. Considering that "one of the fundamental lessons of TEK is that worldviews do matter" (Berkes, 1999:183), the considerable gap between the global, techno-scientific and indigenous world views and the significant time and communication required for designing a project founded on a mutual respect of the two, is it realistic to expect a cost effective result? This reflection leads inevitably to the question: Can CDM regulations be improved in order to deliver livelihood benefits to impoverished local communities? Or are the foundations of the mechanism simply too flawed and too biased towards the economic interests of the powerful global elite? The following discussion section can basically be resumed by the question: is the horse sick or is it dead?

We will begin by exploring the reformist point of view which argues that the *horse is only sick* because in spite of the need for improvement, CDM projects are believed to be effective methods for reducing atmospheric carbon and for delivering livelihood benefits. Based on the literature review and various aspects of the Ipetí-Emberá case study, conditions which may be seen as advantageous for the application of a reforestation CDM project as well as the possible environmental and social benefits will be highlighted. Next, the associated risks and disadvantages of reforestation CDM projects will be presented, information which is necessary to argue both sides of the sick or dead horse argument. This will then lead the discussion towards a review of various recommendations proposed by the scientific community in order to remedy the limits of current CDM modalities. The final section of this discussion will conclude by providing this research's diagnosis of the horse's health

representing or rather the viability of reforestation CDM projects for poor marginalized communities such as the Ipeti-Emberá.

6.3.1. Favourable Conditions for CDM's

Certain elements of the CDM's projects are undoubtedly controversial, yet many argue that if certain safeguards or remedies are applied to improve the mechanisms' modalities, they have the potential to deliver livelihood benefits to local communities (Smith and Applegate, 2004, Gundimeda, 2004, Asquith et al., 2003, IUCN, 2002, Smith and Scherr, 2002, Bass et al., 2000, Klooster and Masera, 2000). As revealed in the Ipeti-Emberá case study, the local reality is based on an intimate relationship with the land and environmental degradation is negatively impacting their livelihood strategies. Additionally, cultural notions of 'work' seem to be tied to activities undertaken on their own land rather than labouring for others outside the community. A revenue generating project based on trees could most possibly resonate with the Emberá's indigenous identity more than any other non-nature related socio-economic activities. For example, comments from one farmer in the Chiapas agroforestry carbon mitigation project reflect this type of cultural identification with trees when he says that: "I want to be planting trees anyways. This just makes it possible to get started" (Nelson and de Jong, 2003:27).

A project which involves tree planting could, and already does, provide sources of employment within the community. These employment opportunities and the profits generated by the sale of carbon credits could help community members access the money needed to send their children to school, to purchase food, building supplies for rebuilding houses and to finance other community projects. Although not quiet based on the same project design, a study of the Noel Kempff Forest Protection project in Bolivia revealed that the financing of community projects, such as land claims assistance, infrastructure improvement and medical attention, represented the primary benefits for the local stakeholders (Asquith et al., 2003). It is also believed that if projects are properly designed, they may contribute to regenerating forest habitats and thus can favourably impact biodiversity.

The production of culturally significant and other useful species needed for daily living could also be stimulated. In fact, in the case of the Ipetí Carbon project, the research team at McGill University proposed an agroforestry design. Agroforestry is a land use system which mixes agricultural or horticultural crops and/or livestock with woody perennials (IUNC, 2002). Several crop associations have been tested and have been based on the modification of traditional systems designed by indigenous populations over centuries (Fearnside, 1985). Trees may not only provide revenue from carbon credits and the sale of non-timber wood products but also provide green fertilizers for land regeneration, fodder smallholder livestock production and even medicinal products (IUNC, 2002) Agroforestry systems have the potential to improve water quality, reduce sedimentation and attract different forms of plant and animal life (Smith and Scherr, 2002). These type of carbon projects could encourage both foreign investors and local communities to benefit from project outcomes. Although very few local livelihood risks are theoretically associated with agroforestry projects as long as they are compatible with local needs and decision making they are unfortunately more successful on household land rather than on community managed lands (Smith and Scherr, 2002).

6.3.2. Disadvantages and Risks of CDM's

OUDCIE, the structure representing Ipetí village members in the development of the carbon project, benefits from the volunteer work of 6-8 community members. Unfortunately no one in the community knows enough about carbon sequestration or have the time and skill sets needed to mobilize community members around the project on a regular basis. As illustrated in Figure 6.3., the carbon project is not fully understood and is seen as something foreign, intangible and complex. This abstract and intricate concept of sequestering, measuring and selling carbon credits places local people at an disadvantages over wealthy and powerful carbon investors and also hinders the emergence of a true sense of community ownership. In the Rezende and Merlin (2003) Social Carbon project in Brazil, regardless of all of their efforts to develop an equitable and socially beneficial sequestration strategy, one of the most significant project challenges was the issue of assuring community ownership. This was also

identified as problematic in the Chiapas project where land owners experienced a lack of power in project management because of the significant barriers experienced in shared decision making. As a result, power was concentrated in the hand of the carbon broker who represented the carbon purchasing clients (Nelson and de Jong, 2003:27).

The characterization of elements of the respondents social representations illustrated in Figure 6.3. shows that the Ipetí carbon project is seen as something similar to winning the lottery, as a big quick-fix money making opportunity. There are important limitations to presenting projects based on economic benefits (Fogel, 2004). Communities are not homogeneous and hierarchy and inequitable distribution of money and associated benefits frequently leads to division and conflict (Fogel, 2004). Although the Ipetí project has not yet begun generating any revenues from the sale of carbon credits, the interviews revealed a great deal of tension between those who are not related to the project leaders and those who promote the project and who are thought to benefit more than others, from collaboration with project researchers. The Ipeti-Emberá also seem to be confused about how and when the money from carbon sales will be received. This is not surprising considering that at the time of field work, there were many unresolved issues around payment methods. If the majority of carbon payments are received *ex ante* (i.e. after the seven or ten years crediting period), this is less compatible with the urgent day-to-day needs of local communities as seen in the Ipetí case study or of communities who may need to change land use strategies if market or policy conditions change (Smith and Scherr, 2004). Carbon payments made at the end of the certification period may also present additional risks for communities because of the need to purchase insurance against project failure related to forest fires, encroachment and difficulties in seedling regeneration (Brown and Corbera, 2003).

Since carbon sequestration is managed as a market mechanism, based on supply and demand, better projects cost more money, generating more expensive credits. This produces a *low hanging fruit* problem in which projects with less expensive credits, attract more investments (South South North, 2005) and which seem to be dominating the market at the moment (CAN, 2006). Social considerations take time and can not be externalized in the

establishment of costs. If projects do not take local concerns into account, they can, as in the case of the Noel Kempff project, prompt local resistance and mistrust (Asquith et al., 2003).

Environmental considerations are also sources of criticism for CDM legislation for the rules do not prohibit the use of large scale plantations, genetically modified organisms nor monoculture practices in carbon sequestration schemes. This lack of regulation poses several important environmental and social risks for local communities. Although these types of practices are not put forth in the design of the Ipetí carbon project, they have affected other local communities as in the case of the Plantar CDM project in Minas Gerais, Brazil promoted by the Prototype Carbon Fund of the World Bank. The Plantar Corporation received carbon finance under the Kyoto Protocol for 23,100 hectares of monoculture eucalyptus plantations used to fuel the production of pig iron instead of other more carbon intensive products such as coal or coke (Kill and Pearson, 2003). Apart from the obvious negative environmental impacts of large-scale non-native species monocultures, Plantar's CDM activities also generated many negative social impacts since the project was put in place without any stakeholder consultation and was established on lands appropriated from Indigenous peoples and Afro-Brazilian communities (Kill and Pearson, 2003).

The final reforestation CDM project risk included in this discussion is one related to the land-use change from subsistence and food production to carbon farming. This issue pertaining to food sovereignty was identified by both interview respondents and the literature review (Fogel, 2004, Gundimeda, 2004, Smith and Scherr, 2004). If land and time is put aside for the sequestration of carbon, there is a risk that community will reduce their subsistence production. Albeit that investing in the production of carbon credits in exchange for cash may permit one to purchase food items, a community's autonomy is greatly affected when they stop investing in their own food productions.

6.3.3. Remedies for a Sick Horse?

Most of the referenced literature related to the study of carbon sequestration recognizes various risks for local communities associated with CDM project designs. However, the vast

majority of researchers seem to adopt a reformist attitude towards the relatively low rate of social return achieved so far and towards the carbon market in general. This is perhaps because reformism is considered as being more constructive for the future of climate change negotiations and because radicalism tends to exert only a limited power, if any on policy makers (Bäckstrand and Lövbrand, 2006). Recommendations for improving CDM project in order to provide more benefits for local livelihoods tend to gravitate around general suggestions to address themes of power in evolving market relationships and designing projects with a diversity of social goals beyond financial interests in order to improve community wellbeing (Nelson and de Jong, 2003).

One of the most interesting suggestions is that CDM policy be harmonized with the social principals of other global conventions such as the Convention on Biological Diversity (local rights should be recognized and compensate and involvement of all stake holders in major management decisions), the International Labor Organisation Convention and the Convention on Desertification (Smith and Scherr, 2002).

In Brown and Corbera's (2003) review of the equity and sustainable development aspirations of the Chiapas smallholder carbon project, the authors suggest that project designs assure clear and well-defined property rights, include specific social benefits criteria and be associated with robust cross-scale institutions that safeguard the equitable sharing of project benefits. In that sense, Gundimeda (2004), who also examined the CDM's sustainable development objective but in relation to communal projects in India, affirmed that the maximum of money generated through the sale of carbon credits be channelled to the community. Gundimeda also suggests that policy provide safeguards to assure that tree planting does not hinder the sustenance of forest user groups. In order to encourage farmers to continue food production and the use of multiple land-use strategies while generating carbon credits, Nelson and de Jong (2003) speak of efforts to limit the size of smallholders' carbon contracts.

Other recommendations include explicitly assuring species diversity (Nelson and de Jong, 2003) and divers land uses strategies in the definition of afforestation-reforestation (Smith

and Scherr, 2002). Smith and Scherr (2002) affirm that social impact assessments should be mandatory and require basic requirement for stakeholder consultations (Smith and Scherr, 2002) and Asquith et al. (2003) warn that projects should be designed and implemented in a cautious and participative manner. Finally, the promotion of measures which reduce transaction costs and which establish international capacity-building and advisory services (Smith and Scherr, 2002) are proposed prescriptions for in the case of the sick horse CDM scenario.

6.4. A Dead horse and Ecocolonialism

Global climate change negotiations suffer from fundamental governance issues because IP groups are excluded from negotiations and are thus prohibited from representing the indigenous worldview in policy negotiations regarding projects to be implemented on their lands. This omission hinders the emergence of mutual trust which is needed to create win-win relationships. The results of the Ipetí-Case study portray a community struggling with numerous issues related to the regeneration of elements in the natural, social and individual (the self) spheres of their lives. More precisely, the Ipeti-Emberá are undergoing a difficult period of transition created by the development in their region, a development which is attacking the essence of their cultural vitality. The CDM paradigm disregards these pragmatic realities by aiming to provide 'sustainable development' through cost-effective, techno-scientifically calculated carbon tree planting schemes that are not based on the on the equitable sharing of benefits between global and local stakeholders. It is precisely this foundational flaw that inevitably leads us to the conclusion that the CDM *horse* is dead.

In order to do regenerating local livelihoods, international policy negotiation must establish equitable forms of governance that favour the empowerment of all stakeholders, including that of indigenous and local peoples' communities. Ninacs (2001) identifies the following components as being essential to achieving community empowerment:

a) Recognition of existing competences and the development of others skills relevant to the project;

b) Community participation in decision making and the redistribution of power;

c) Interactive and transparent communication and;

d) Existence of a collective identity which unites and associates members to the community and to the environment.

Although reforestation CDM's may potentially respond to Ninac's project components unfortunately current governance structures do not facilitate the redistribution of power (component b) or transparent communication (component c). Unless these issues are resolved, despite all the CDM's honourable intentions, they can not resolve poverty issues because poverty is the result of oppression and can only be remedied through liberation from dependency (Sach, 1999). Regardless of all the *possible* benefits of CDM projects, they represent a form of heteronomy and create contexts of dependency on foreign scientists, policy makers, carbon brokers and markets. By participating in global carbon markets, communities like the Ipeti-Emberá are detracting energy from discovering innovative strategies to become self-sufficient and autonomous, both characteristic which contribute towards improved wellbeing (Sachs, 1999). And in the case of Ipetí, obtaining legal land ownership and developing the community's autonomy appears to be more of a culturally relevant investment than producing an export, cash-crop style commodity for foreign markets.

A carbon market is not something that emerges naturally but rather is created by global and national institutions that have a particular vision of the world and specific objectives for their actions (Brown and Corbera, 2003). The CDM, in no way questions the paradigm that has created urgent climate change issues and simply continues to encourage a greater consumption and exchange of goods (Lohmann, 2005). It is essential to recognize that it is the rich countries who are creating the bulk of the climate change problem whilst Indigenous and other local communities in Majority World countries who, because of their significant reliance on their natural environment, are the most vulnerable to the impacts of climate change (Thomas and Twyman, 2005). Historically their livelihoods have also been impinged

upon by colonialism, post colonialism, environmental degradation, and by market changes (Thomas and Twyman, 2005). Instead of tackling the root cause of climate change by financing emissions reductions, money is spent on creating and distributing legal rights to pollute (Lohmann, 2005). Considering the numerous risks associated with CDM's, it is evident that the mechanism was conceived with worldview that has little to do with local realities and which unfortunately only serves to enrol local people in hierarchal relations who's terms are decided by a global elite (Fogel, 2004).

The objectives of the implanting CDM projects in 'developing countries' is to permit 'developed countries' fulfill their emissions reductions targets in a cost effective manner while helping the former achieve an 'oh-so-desirable' sustainable development. This objective disturbingly resembles another strategy from the not so distant past: *colonialism*. The Office québécois de la langue française (2007) provides the following definition colonialism:

> [...]From classical times onwards, migrations leading to the settlement and domination of foreign territories [...] have been inscribed in the framework of colonialism, which justifies conquest by reference to the objective needs of the metropolitan centre and by sanctifying this expansionism by refers to the mission of civilizing the "barbarian" world (liberal translation, Office québécois de la langue française, 2007).

Considering the results of the Ipeti-Emberá case study and the information found in the literature review, this research argues that CDM's reinforce existing inequalities with respect to land tenure right, access to alternative livelihood strategies and autonomy, and thus constitutes a form of ecological colonialism.

Instead of forcing industrialized countries to shift to low carbon economies and to invest in energy efficiency and the reduction of fossil fuel extraction (Fern, 2005), the Kyoto Protocol and the Clean Development Mechanism condone and encourages their use of the poor and the powerless' land in order to continue fuelling their exponentially growing and polluting consumption habits. This cost effective strategy is considered by the global elite to be an *objective need* because dominant discourse argues that reducing the use of fossil fuels is too

costly and would cause the global economy to collapse. This form of eco-colonialism prioritises economic concerns over social or environmental concerns. These cost efficient needs fulfilled through the CDM may offer some isolated compensation to those who are struggling to survive, but the scope of the cultural, social and environmental impacts of creating carbon dumps and discouraging self-sufficiency are veiled by the sustainable development ideology which argues that quality of living can be improved by gaining technological and economic access to global markets. Once again, everything is boiled down to the heralding economic development.

CONCLUSION

Berkes (1999) affirms that systems of beliefs and world views do matter, which makes the study of the social representations held by local communities in contexts where global policy is to be applied particularly insightful. We suggest that it may be more important for the Emberá to find alternatives to development rather than development alternatives (Escobar, 1995). Considering that it is development that has brought on deforestation, the need for cash, and feelings that their culture is becoming irrelevant in the modern world, is it really development that will resolve these issues and respond to the Emberá's needs? The idea is not to romanticize and revert back to traditional ways of doing, but perhaps to move away from development science and partially from western science in order to make space for other types of knowing and experience (Escobar, 1995). If improving the quality of life for impoverished communities is to sincerely be integrated in project objectives, focus should be on encouraging values such as cooperation, solidarity and on including pedagogical axes in the projects' planning and activities. There must however, be vigilance that the educative elements so as not to reproduce dominant power structures and disseminate culturally invalidating knowledge (Callejas, 2005) as in the case of the of the school system in which the Emberá are currently enrolled. There must be an investment in education that is composed of "forms of knowing and social constructions that originate in daily life and that serve as a cognitive base to becoming conscious of the surround world and ones personal context within a collectivity " (liberal translation) (Callejas, 2005:247).

It is in this perspective that environmental education becomes a means to accompany people in the clarification of their relationship with their environment, and as a process to design contextually relevant projects that help transform and improve these relationships. For example, the environmental education specialist involved in Social Carbon project in Brazil says explains that "even when you have identified an idea or an activity which has considerable potential, finding a way for it to work successfully within the community is very

difficult and time-consuming" (Rezende and Merlin, 2003:57). Sauvé defines environmental education in the following manner:

> Environmental education is an integral part of the development of individuals and social groups in relation to the environment. Above and beyond mere transmission of knowledge, environmental education fosters the construction of collective knowledge within a critical framework. It develops useful knowledge about ways of doing things which can be associated real powers to act. It encourages people to develop environmental ethics and adopt attitudes, values and behaviours inspired by this ethic. It favours cooperative learning in, by and for environmental action (liberal translation, Sauvé, 1997:53).

Granted, environmental education alone can not provide solutions to needs such as food and cash revenues, but it can be used in projects to help communities like the Emberá find culturally appropriate endeavours for lifestyles that are based on a proximity and reliance on Nature. Environmental education can not only contribute towards improving learning conditions but also favour cognitive, affective, social praxical development in people as to optimize the people-society-environment network (Sauvé, 1997).

Habermas states that ethics can only emerge to help regulate human interaction when society expresses a desire to live together as conscious political agents who are able to give value to their respective interests and interpretations, by participating in individual and group discussions in a reflexive manner (Bidou, 2005). Unfortunately, Climate Change negotiations and the CDM's do not reflect this ethic nor the interest to take in to consideration the divers interests and interpretations of the all those involved in a holistic manner. Although it seems unimaginable that their could be a biochemical equivalence between the $C0_2$ emitted in northern countries and the carbon sequestrated in trees planted half way across the world, this research does recognize that reforestation carbon projects may be able to deliver some fragmented benefits to local communities. However, when examining the holistic impacts of such an enterprise on local peoples in terms of loss of empowerment, loss of self-sufficiency and cultural degradation, the results of this research force the ethics of paying people to redirect their livelihoods towards using their land to plant trees for foreign and powerful nations to be brought into question.

ANNEX A

SEMI-DIRECTED FOCUS GROUP QUESTIONS

On Representations of the Forest

1) Can you share a story of one of your experiences in "el *Monte*"?
2) Has the Monte changed since you were a child, if yes how?
3) Does the forest influence what you eat? If so how?
4) What elements found in the forest are important to your traditions?
5) Can you give examples of the knowledge about the forest that you possess? How did you learn them?
6) What activities do you practice in the forest? Is there a relationship between the forest and traditional Emberá knowledge? If yes, what is this relationship?
7) What type of changes to you think could emerge in the forest with the implementation of the carbon project?

1) ¿Puede usted contarme una historia de una de sus experiencias en el Monte?
2) ¿He cambiada el monte desde que usted era niña? ¿De qué manera?
3) ¿Afecta el bosque lo que comen? ¿De qué manera?
4) ¿Qué elementos que se encuentran en el bosque son importantes para sus tradiciones?
5) ¿Podrían dar ejemplos de los conocimientos del bosque que tienen? ¿Cómo los aprendieron?
6) ¿Qué tipo de actividades se practican en el bosque? ¿Hay una relación entre el bosque y el conocimiento tradicional Emberá? ¿Si sí, cuál es esa relación?
7) ¿Que cambios ustedes piensen pueden venir a el monte con el proyecto de carbon?

On Representations of Development

1) Can you tell me what the village was like when you were little?
2) And can you describe your village today? What has changed?
3) What conditions are necessary for maintaining the Emberá way of life?
4) Can you give me 3 words or 3 ideas that come to mind when you think of a good life in the future for your community?
5) What changes might occur in the elements of the forest that are important to you with the future you described earlier?
6) If you keep in mind the future you described, would these changes affect the way you eat, the quantity of food available and where you get food? How?

1) ¿Podrían contarme de cómo era el pueblo cuando eran pequeños/pequeñas?
2) ¿Y podrían describirme el pueblo hoy día? ¿Qué ha cambiado?Can you describe what the village is like today?
3) ¿Qué condiciones son necesarias para el mantenimiento de la forma de vida Emberá?
4) ¿Podrían decirme 3 palabras o 3 ideas que se les vienen a la mente cuando piensan en el desarrollo de su comunidad?
5) ¿Dentro de los elementos del bosque que son importantes para ustedes, qué cambios pueden imaginar con el desarrollo que describieron anteriormente?
6) ¿Guardando en mente estas ideas sobre el desarrollo, ¿piensan que habría cambios en lo que su familia come, en la cantidad de comida disponible, y en donde consiguen la comida?

On Representations of the Carbon Project

1) What different projects have taken place in Ipeti?
2) What do you think about the community carbon project? How do you feel about it?
3) What changes do think the carbon project will bring on?
4) How did the project begin?
5) How do you think the Emberá way of life will change if the community receives the money from the carbon project?

1) ¿Qué diferentes proyectos que han hecho aquí
2) ¿Qué piensan del proyecto comunitario del carbón? ¿Cómo se sienten con este proyecto?
3) ¿Qué piensan que el proyecto del carbón va cambiar?
4) ¿Como ha inicio este proyecto.
5) ¿Como va a cambiar la forma de vivir Emberá, si viene el dinero del proyecto de carbono?

ANNEX B

FOCUS GROUP ANALYSIS TABLE

Workshop	El Monte		Development		Carbon Project	
Themes	Women	men	women	men	women	Men
Changes to traditional activities and foods	xxxxx	xxxx	x	x	x	
Degraded land impacts agriculture	xxxxxx	x	x	x	xx	
Increased pest incidences	xx	xx				
Need for $=Working outside Ipeti	xxxx	xxx	xxx	xx		
Disappearance of animals and trees	xxx	xx	xx		x	
Perceived local climate change	x	xx			x	
Loss of territory	x			x		
Need for bilingual/cultural education		x		x		x
Cultural gap between generations			x			
Need for collective action	x	x				
Desire for individual action	x				xx	x
The past as physically demanding	xxxx	xxxxx				
Work= working the land	x	x			x	xx
Important cultural differences with Colonists	xx					
Loss of traditional knowledge/culture	xx	xxx	xxxx	x		
Use of traditional knowledge	x					
Desire for better infrastructure	x				x	x
Wanting to children to be better than themselves	x	x	x	x		
Effects of educations on culture	xx	xx	xx	x		
Change in family structure and community relations	x	xx	x	xx		
National government doesn't respect their rights		x	x	x		
School forces them to live in the village		xxx	xx			
Lack of pride in Emberá identity			xx			
Projects are not always appropriate					x	
Project doesn't include everyone					x	xx
Need more explanation about Carbon					xxx	xx
Frustration over delay of project	x				x	xxxxx
Lack of community unity for project						xx
Project requires too big investment						x
Lack time for the project due to work						x
Need education on social aspects						xxx
To many uncertainties related to project					x	x
Lack of confidence in leadership					x	x
Describes project like winning the lottery	x		xx		x	xx

ANNEX C

PREGUNTAS DE LAS ENTREVISTAS INDIVIDUALES

I. EL MONTE

1. Impensamos con un pregunta de creatividad. Cuando cierra los ojos, y piensa en el Monte, que vea, que sienta?

Preguntas a desarrollar:
Que es el monte para usted?
Qué piensa del monte?
Puede describirme su relación con el monte?

2. Cuales son su preocupaciones sobre el monte?

II. CAMBIOS

3. En Ipeti, ha habido cambios en los últimos 10 anos o desde la creación del pueblo la vida ha sido siempre igual?

4. SI ES EQUAL: Entonse como la vida ha cambiado desde que era nino/nina?

5. Cuando usted piensa en estos cambios en su (y su familias) moda de vivir a través de los anos:

i) Cuáles le alegran ?

ii) Cuáles le preocupan?

III. AGRICULTURA

6. Las practicas de agricultura de ahora son iguales o distintas de las de antes?

Preguntas a desarrollar:
Por qué ?
Cuales son los cambios?
Hay cambios buenos ?
Hay cambios malos ?

IV. SEGURIDAD DEL ALIMENTO

7. Sembré este año? Si

8. Si si, he sembrado mas o menos que hace cinco años? 3. Si no, por qué cree se han dado estos cambios?

9. Hay cambios en la cuantidad y manera que su familia come de hace 5 anos? Por que?

V. EDUCACIÓN, DESARROLLO, COMUNIDAD

10. Cuales son los principales fuerzas del Pueblo? (Tres e importancia)

a)
b)
c)

11. Cuales son los principales problemas del Pueblo? (Tres y importancia?)

12. Que cree usted que la comunidad neccesita para resolver estos problemas?

13. Que impactos se vean desde ahora que los jóvenes estudian?

14. Que necesitas para mejorar su vida?

VI. CARBONÓ

15. Qué piense usted del proyecto de carbonó? Que usted ve como siendo las ventajas del proyecto piensa de este proyecto?

VII. ASOCIACIONES DE PALABRAS

16. Puede usted darme tres ideas que vengan a su mente cuando dijo estas palabras:

MONTE-CAMBIO-DIFFERENTE-FUTURO-CARBONO

ANNEXE D

ETHICS CONDUCT POLICY FOR RESEARCH INVOLVING HUMANS
CERTIFICATE OF APPROVAL

UQÀM **Faculté des sciences**
Université du Québec à Montréal

CONFORMITÉ À L'ÉTHIQUE EN MATIÈRE DE RECHERCHE IMPLIQUANT LA PARTICIPATION DE SUJETS HUMAINS

Le Comité facultaire d'éthique de la recherche sur les êtres humains de la Faculté des sciences de l'UQAM a examiné le projet de recherche suivant :

Responsable du projet :	Saleema Hutchinson et Lucie Sauvé
Département ou École :	Maîtrise en sciences de l'environnement, Institut des sciences de l'environnement
Superviseur :	Lucie Sauvé
Titre du projet :	Les représentations sociales et le projet de mitigation de carbone à Ipeti, Panama

Ce projet de recherche est jugé conforme aux pratiques habituelles et répond aux normes établies par le «*Cadre normatif pour l'éthique de la recherche avec des êtres humains de l'UQAM*».

Le projet est jugé recevable au plan de l'éthique de la recherche sur des êtres humains.

Membres du Comité facultaire d'éthique de la recherche avec des êtres humains

NOM	TITRE	DÉPARTEMENT
Achim, André	Professeur	Psychologie
Arvisais, Louise	Secrétaire du Comité institutionnel d'éthique de la recherche avec des êtres humains	Service recherche et création
Desrosiers, Richard	Professeur	Chimie
Kieran-Sauvé, Carolyn	Professeure	Mathématiques
Mayer, Francine M.	Professeure	Sciences biologiques
Vandelac, Louise	Professeure	Sociologie et Institut des sciences de l'environnement

18 juillet 2005
Date

Francine M. Mayer
Présidente du Comité

Case postale 8888, succursale Centre-ville
Montréal (Québec) Canada H3C 3P8
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ANNEXE E

CLIMATE JUSTICE NOW! THE DURBAN DECLARATION ON CARBON TRADING

Representatives from organizations and peoples' movements from around the globe met in Durban, South Africa from October 4-7, 2004. The meeting was to discuss realistic solutions approaches to dealing with global climate change. The participants of this meeting drafted this declaration for a global grassroots movement against climate change:

As representatives of people's movements and independent organisations, we reject the claim that carbon trading will halt the climate crisis. This crisis has been caused more than anything else by the mining of fossil fuels and the release of their carbon to the oceans, air, soil and living things. This excessive burning of fossil fuels is now jeopardising Earth's ability to maintain a liveable climate.

Governments, export credit agencies, corporations and international financial institutions continue to support and finance fossil fuel exploration, extraction and other activities that worsen global warming, such as forest degradation and destruction on a massive scale, while dedicating only token sums to renewable energy. It is particularly disturbing that the World Bank has recently defied the recommendation of its own Extractive Industries Review which calls for the phasing out of World Bank financing for coal, oil and gas extraction.

We denounce the further delays in ending fossil fuel extraction that are being caused by corporate, government and United Nations' attempts to construct a "carbon market", including a market trading in "carbon sinks".

History has seen attempts to commodify land, food, labour, forests, water, genes and ideas. Carbon trading follows in the footsteps of this history and turns the earth's carbon-cycling capacity into property to be bought or sold in a global market. Through this process of creating a new commodity – carbon - the Earth's ability and capacity to support a climate conducive to life and human societies is now passing into the same corporate hands that are destroying the climate.

People around the world need to be made aware of this commodification and privatization and actively intervene to ensure the protection of the Earth's climate.

Carbon trading will not contribute to achieving this protection of the Earth's climate. It is a false solution which entrenches and magnifies social inequalities in many ways:

• The carbon market creates transferable rights to dump carbon in the air, oceans, soil and vegetation far in excess of the capacity of these systems to hold it. Billions of dollars worth of these rights are to be awarded free of charge to the biggest corporate emitters of greenhouse gases in the electric power, iron and steel, cement, pulp and paper, and other sectors in industrialised nations who have caused the climate crisis and already exploit these systems the most. Costs of future reductions in fossil fuel use

are likely to fall disproportionately on the public sector, communities, indigenous peoples and individual taxpayers.

• The Kyoto Protocol's Clean Development Mechanism (CDM), as well as many private sector trading schemes, encourage industrialised countries and their corporations to finance or create cheap carbon dumps such as large-scale tree plantations in the South as a lucrative alternative to reducing emissions in the North. Other CDM projects, such as hydrochlorofluorocarbons (HCFC) -reduction schemes, focus on end-of pipe technologies and thus do nothing to reduce the impact of fossil fuel industries' impacts on local communities. In addition, these projects dwarf the tiny volume of renewable energy projects which constitute the CDM's sustainable development window-dressing.

• Impacts from fossil-fuel industries and other greenhouse-gas producing industries such as displacement, pollution, or climate change, are already disproportionately felt by small island states, coastal peoples, indigenous peoples, local communities, fisherfolk, women, youth, poor people, elderly and marginalized communities. CDM projects intensify these impacts in several ways. First, they sanction continued exploration for, and extraction, refining and burning of fossil fuels. Second, by providing finance for private sector projects such as industrial tree plantations, they appropriate land, water and air already supporting the lives and livelihoods of local communities for new carbon dumps for Northern industries.

• The refusal to phase out the use of coal, oil and gas, which is further entrenched by carbon trading, is also causing more and more military conflicts around the world, magnifying social and environmental injustice. This in turn diverts vast resources to military budgets which could otherwise be utilized to support economies based on renewable energies and energy efficiency.

In addition to these injustices, the internal weaknesses and contradictions of carbon trading are in fact likely to make global warming worse rather than "mitigate" it. CDM projects, for instance, cannot be verified to be "neutralizing" any given quantity of fossil fuel extraction and burning.Their claim to be able to do so is increasingly dangerous because it creates the illusion that consumption and production patterns, particularly in the North, can be maintained without harming the climate.

In addition, because of the verification problem, as well as a lack of credible regulation, no one in the CDM market is likely to be sure what they are buying. Without a viable commodity to trade, the CDM market and similar private sector trading schemes are a total waste of time when the world has a critical climate crisis to address.

In an absurd contradiction the World Bank facilitates these false, market-based approaches to climate change through its Prototype Carbon Fund, the BioCarbon Fund and the Community Development Carbon Fund at the same time it is promoting, on a far greater scale, the continued exploration for, and extraction and burning of fossil fuels – many of which are to ensure increased emissions of the North.

In conclusion, 'giving carbon a price' will not prove to be any more effective, democratic, or conducive to human welfare, than giving genes, forests, biodiversity or clean rivers a price.

We reaffirm that drastic reductions in emissions from fossil fuel use are a pre-requisite if we are to avert the climate crisis. We affirm our responsibility to coming generations to seek real solutions that are viable and truly sustainable and that do not sacrifice marginalized communities.

We therefore commit ourselves to help build a global grassroots movement for climate justice, mobilize communities around the world and pledge our solidarity with people opposing carbon trading on the ground.

Signed 10 October 2004
Glenmore Centre, Durban, South Africa

DURBAN MEETING SIGNATORIES

Carbon Trade Watch
Indigenous Environmental Network
Climate & Development Initiatives, Uganda
Coecoceiba-Amigos de la Tierra, Costa Rica
CORE Centre for Organisation Research & Education, Manipur, India
Delhi Forum, India
Earthlife Africa (ELA) eThekwini Branch, South Africa
FERN, EU
FASE-ES/Green Desert Network Brazil 2
Global Justice Ecology Project, USA
Groundwork, South Africa
National Forum of Forest People And Forest Workers(NFFPFW), India
Patrick Bond, Professor, University of KwaZulu Natal School of Development Studies, South Africa
O le Siosiomaga Society, Samoa
South Durban Community Alliance (SDCEA), South Africa
Sustainable Energy & Economy Network, USA
The Corner House, UK
Timberwatch Coalition, South Africa
WorldRainforest Movement, Uruguay

SUPPORTING ORGANISATIONAL SIGNATORIES

50 Years Is Enough: U.S. Network for Global Economic Justice, USA
Aficafiles, Canada
Africa Groups of Sweden, Sweden
Alianza Verde, Honduras
Ambiente y Sociedad, Argentina
Angikar Bangladesh Foundation, Bangladesh
Anisa Colombia, Colombia
Asociacion Alternativa Ambiental, Spain
Asociacion Amigos Reserva Yaguaroundi, Argentina
Asociacion de Guardaparques Argentinos, Argentina
Asociación Ecologista Piuke, Argentina Asociacion para la Defensa del Medio Ambiente del Noreste Santafesino, Argentina
Asociación San Francisco de Asís, Argentina
Association France Amerique Latine, France
Associacion Lihue San Carlos de Barloche / Rio Negro, Argentina
Association pour un contrat mondial de l'eau, Comité de Seine Saint Denis, France
Associação Caeté - Cultura e Natureza, Brasil
Athlone Park Residents Association, South Africa
Austerville Clinic Committee, South Africa
Australian Greens, Australia
Aukland Rising Tide, New Zealand
BanglaPraxis, Bangladesh
Benjamin E. Mays Center, USA
Bluff Ridge Conservancy (BRC), South Africa
BOA, Venezuela
Boulder Environmental Activists Resource, Rocky Mountain Peace and Justice Center, USA
The Bread of Life Development Foundation, Nigeria
CENSAT-Friends of the Earth Colombia, Colombia
Center for Economic Justice, USA
Centre for Environmental Justice, Sri Lanka
Center for Environmental Law and Community Rights Inc./ Friends of the Earth (PNG), Papua New Guinea
Center for Urban Transformation, USA
Centro de Derecho Ambiental y Promoción para el Desarrollo (CEDAPRODE), NicaraguaCentro de Investigacion Cientifica de Yucatan A.C., Mexico
Committee in Solidarity with the People of El Salvador, USA
Christ the King Church Group, South Africa
Clairwood Ratepayers Association (CRA), South Africa
Cold Mountain, Cold Rivers, USA
Colectivo de Proyectos Alternativos de México (COPAL), Mexico
Colectivo MadreSelva, Guatemala
Comité de Análisis "Ana Silvia Olán" de Sonsonate – CANASO,El Salvador
Committee in Solidarity with the People of El Salvador, USA
Community Health Cell, Bangalore, India
Corporate Europe Observatory (CEO), Netherlands
C.P.E.M. N°29-Ciencias Ambientales, Argentina
Del Consejo de Organizaciones de Médicos y Parteras Indígenas Tradicionales de Chiapas, Mexico
Enda América Latina, Colombia
ECOGRAIN, Spain
Ecoisla, Puerto Rica
EarthLink e.V.-The People & Nature Network, Germany
Ecological Society of the Philippines, Philippines
Ecologistas en Acción, Spain
Ecoportal.net, Argentina
ECOTERRA International
El Centro de Ecologia y Excursionismo de la Universidad de Carabobo, Venezuela
Els Verds - Alternativa Verda, Spain

Environment Desk of Images Asia, Thailand
FASE Gurupá, Brasil
Forest Peoples Programme, UK
Foundation for Grassroots Initiatives in Africa, Ghana
Friends of the Earth International
Friends of the Earth Australia, Australia
Friends of the Siberian Forests, Russia
FSC-Brasil, Brasil
Fundación Argentina de Etoecología (FAE), Argentina
Fundación Los de Tilquiza, proyecto AGUAVERDE, Argentina
Groupe d'Etudes et de Recherche sure les Energies Renouvelables et l'Environnement (GERERE), Morocco
Gruppo di Volontariato Civile (GVC-Italia), oficina de Nicaragua, Nicaragua
House of Worship, South Africa
Indigenous Peoples' Biodiversity Network, Peru
InfoNature, Portugal
Infringement Festival, Canada
Iniciativa Arcolris de Ecologia y Sociedad, Argentina
Iniciativa Radial, Argentina
Institute for Social Ecology Biotechnology Project, USA
Instituto Ecoar para Cidadania, Brasil
Instituto Igaré, Brasil
International Fund for Animal Welfare (IFAW), Belgium
International Indian Treaty Council
Isipingo Environmental Committee (IEC), South Africa
Isipingo Ratepayers Association, South Africa
Jeunesse Horizon, Camerun
JKPP /Indonesian Community Mapping Network, Indonesia
Joint Action Committee of Isipingo (JACI), South Africa
KVW Translations, Spain
LOKOJ, Bangladesh
London Rising Tide, UK
Malvarrosamedia, Spain
Mangrove Action Project (MAP), USA
Mano Verde, Colombia
Mercy International Justice Network, Kenya
Merebank Clinic Committee (MCC), South Africa
Movimiento por la Paz y el Ambiente, Argentina
Movimento por los Derechos y la Consulta Ciudadana, Chile
Nicaragua Center for Community Action, USA,
Nicaragua Network (US), USA
Nicaragua-US Friendship Office, USA
NOAH-Friends of the Earth Denmark, Denmark
Núcleo Amigos da Terra, Brasil
Ogoni Rescue Patriotic Fund, Nigeria
Oilwatch International, Ecuador
Oilwatch Africa, Nigeria
Organizacion Fraternal Negra Honduirena, Honduras
Parque Provincial Ernesto Tornquist, Argentina
Pacific Indigenous Peoples Environment Coalition (PIPEC),Aotearoa/New Zealand
Pesticides Action Network Latin America, Uruguay
Piedad Espinoza Trópico Verde, Guatemala
PovoAção, Brasil
Prideaux Consulting, USA
Projeto tudo Sobre Plantas - Jornal
SOS Verde, Brasil
Public Citizen, USA
Rainforest Action Network, USA
Rainy River First Nations, Canada
Reclaim the Commons, USA
Red de Agricultura Orgánica de Misiones, Argentina
REDES-Amigos de la Tierra, Uruguay
Red Verde, Spain
Rettet den Regenwald, Germany
Rising Tide, UK
Sahabat Alam Malaysia /FOE-Malaysia, Malaysia
San Francisco Bay Area Jubilee Debt Cancellation Coalition, USA
Scottish Education and Action for Development, UK
S.G.Fiber, Pakistan
Silverglen Civic Association (SCA), South Africa
Sisters of the Holy Cross - Congregation Justice Committee, USA
Sobrevivencia, Friends of the Earth Paraguay, Paraguay
Sociedad Civil, Mexico
SOLJUSPAX, Philippines
Tebtebba Foundation, Philippines
The Sawmill River Watershed Alliance, USA
TRAPESE – Take Radical Action Through Popular Education and Sustainable Everything, UK / Spain
Treasure Beach Environmental Forum (TBEF), South Africa
Uganda Coalition for Sustainable Development, Uganda
Ujamaa Community Resource Trust (UCRT), Tanzania
UNICA, Nicaragua
Union Chrétienne pour l'Education et Développement des Déshérités (UCEDD), Burundi
Union Mexicana de Emprendedores Inios, A. C., Mexico
VALL DE CAN MASDEU, Spain
Wentworth Development Forum (WDF), South Africa
Western Nebraska Resources Council, USA
World Bank Boycott/Center for Economic Justice, USA
Worldforests.

GLOSSARY

Afforestation. The process of establishing and growing forests on bare or cultivated land which has not been forested in recent history.

Annex A. List of 6 gases included in the Protocol and economic sectors responsible for emissions.

Annex I countries. The 41 Parties (countries) to the UNFCCC industrialized countries and economies in transition. Their responsibilities under the Convention are various, and include a non-binding commitment to reducing their greenhouse gas emissions by an average of 5% below 1990 levels by the year.

Annex II countries. The 23 Parties (countries) to the UNFCCC that must provide financial assistance to "developing countries".

Baseline. The baseline represents the emissions of a company, business unit or project, using a business as usual scenario i.e. in the absence of a certified project.

Certified Emission Reduction (CER). CER is the official name for carbon credits generated by CDM projects and equal to one tonne of carbon dioxide equivalent.

Carbon Dioxide. One of the most important green house gases which is generated by the combustion of fossil fuel.

Carbon Sink. A carbon sink is a reservoir that can absorb or "sequester" carbon dioxide from the atmosphere. Forests are the most common form of sink, as well as soils, peat, permafrost, ocean water and carbonate deposits in the deep ocean.

Crediting period. The time period for which a CDM project may generate carbon credits. Projects may be designed for crediting periods of either a 7 year period which may be renewed twice making a total of 21 years or a one 10 year period.

Clean Development Mechanism. The CDM is a mechanism established by Article 12 of the Kyoto Protocol for project-based emission reduction activities in developing countries. The CDM is designed to meet two main objectives: to address the sustainable development needs of the host country, and to increase the opportunities available to Parties to meet their reduction commitments. allow for the creation and transfer of emissions permits between countries. Based on economic market principals, they are designed to minimize the cost of reducing global greenhouse emissions.

CDM Executive Board. Finalized at COP7 in 2001, its aim being to supervise the CDM under the authority and guidance of the COP/MOP. The CDM Executive Board is

authorized to approve methodologies for baselines, monitoring plans and project boundaries; accredit operational entities; and develop and maintain the CDM registry.

Conference of the Parties. The role of the COP, which consists of more than 189 nations that ratified or acceded to the Framework Convention on Climate Change, is to promote and review the implementation of the convention.

Emissions Trading. Emissions Trading is a general term used for the three Kyoto Protocol flexibility mechanisms. It is a market-based system encourages emitters to develop the means by which emissions can inexpensively be reduced.

Green House Gases. Gases responsible for global warming, gases absorbe the infrared thermic rays emited from the earth and keep in the atmosphere. Carbon Dioxide (CO_2), Methane (CH_4), Nitrous oxide (N20), Sulfur Hexafluoride(SF_6), Hydrofluorocarbons (HFC), Perflourocarbons (PFC)

Majority World. Term used to describe the countries with the highest population and who generally suffer from the greatest poverty. These countries economy is often focused on the extraction of natural ressources for export. The expression of Majority World replaces the common usage of terms such as "the South", "developing countries" or the "third world".

Meeting of the Parties. At Montreal, the first ever meeting of the Parties to the Protocol (MOP).

Non-annex 1 countries. Countries not included in Annex I of the United Nations Framework Convention on Climate Change UNFCCC. Non-Annex I countries do not currently have binding emission reduction targets.

Reforestation. This process increases the capacity of the land to sequester carbon by replanting forest biomass in areas where forests were recently harvested.

Sequester. Extraction of CO_2 from the atmosphere and stocking it as a below ground biomass, the process of increasing the carbon in a carbon pool other than the atmosphere. Carbon pools is a reservoir which has the capacity to accumulate or release carbon, such as above-ground biomass, below-ground biomas, litter, dead wood, and soil organic carbon.

Unilateral CDM Projects. Unilateral CDM projects are projects which do not have a project investor from abroad. The descision was taken at COP7 to allow developing countries to undertake CDM projects without an Annex I partner, and market the resulting emissions credits.

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